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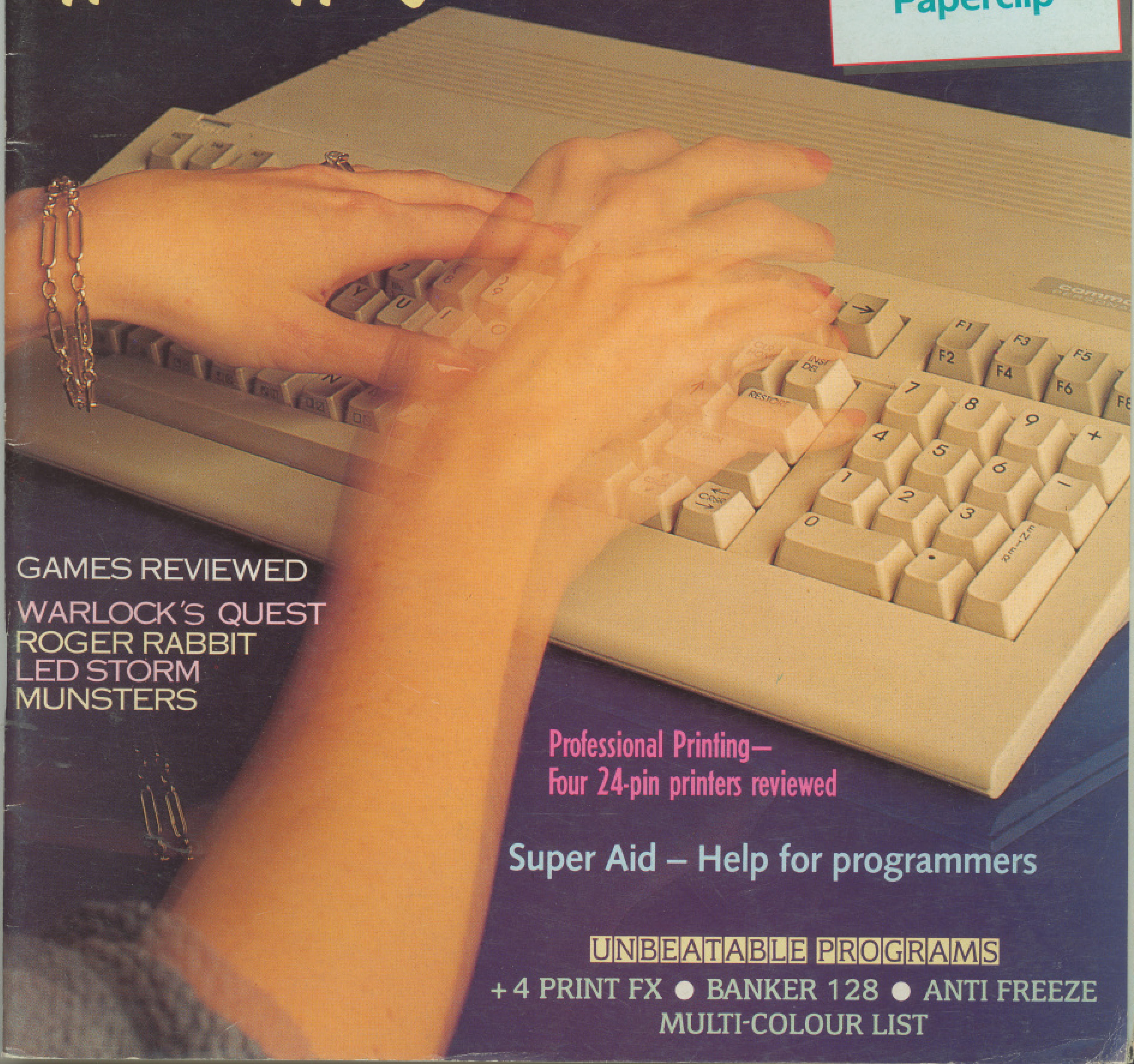
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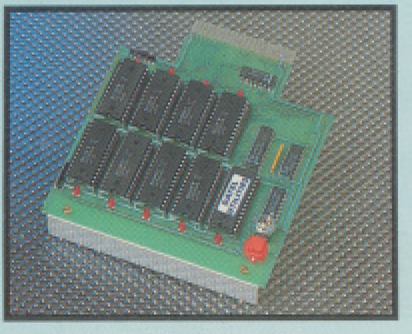
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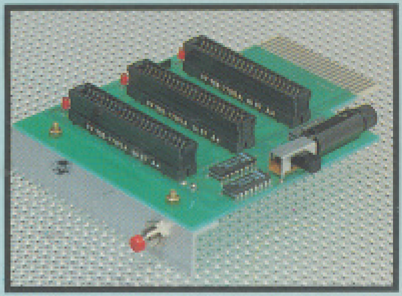
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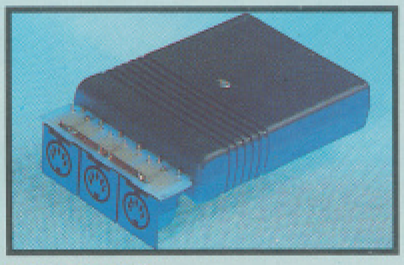


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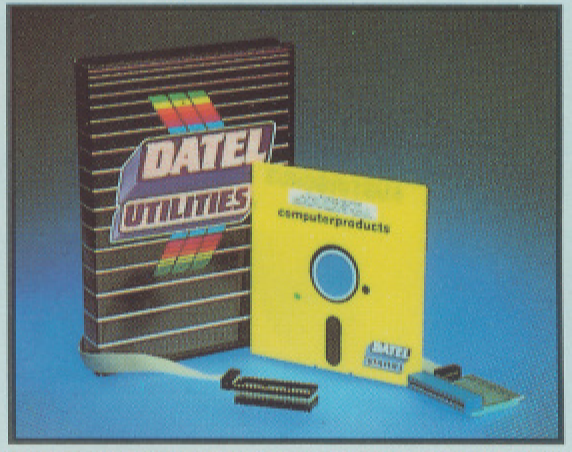
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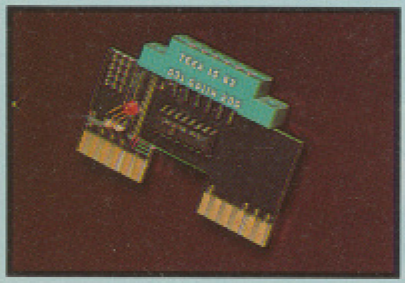
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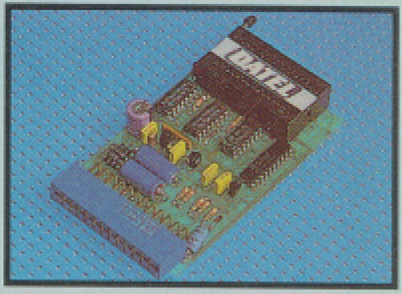
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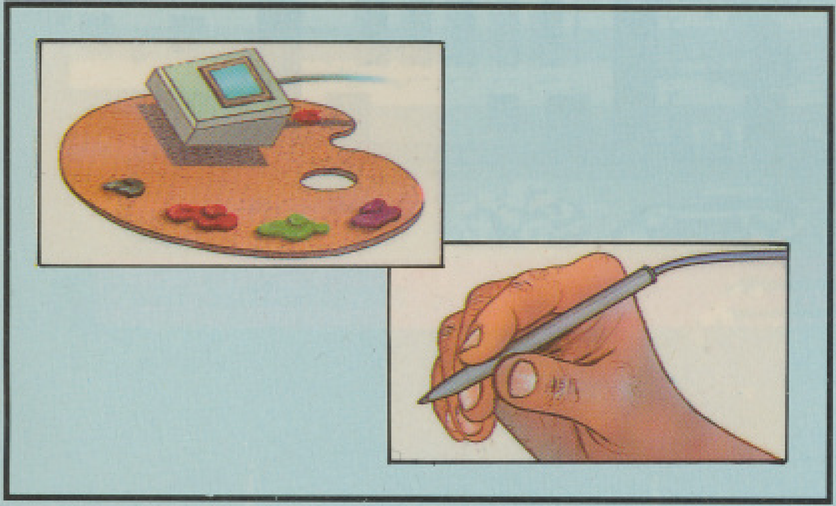
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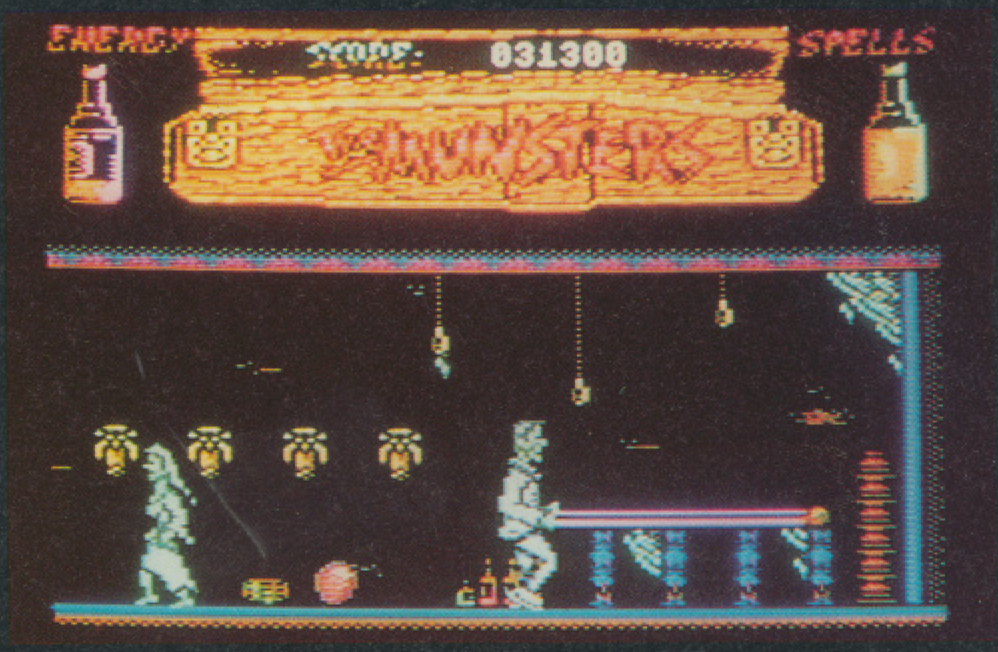
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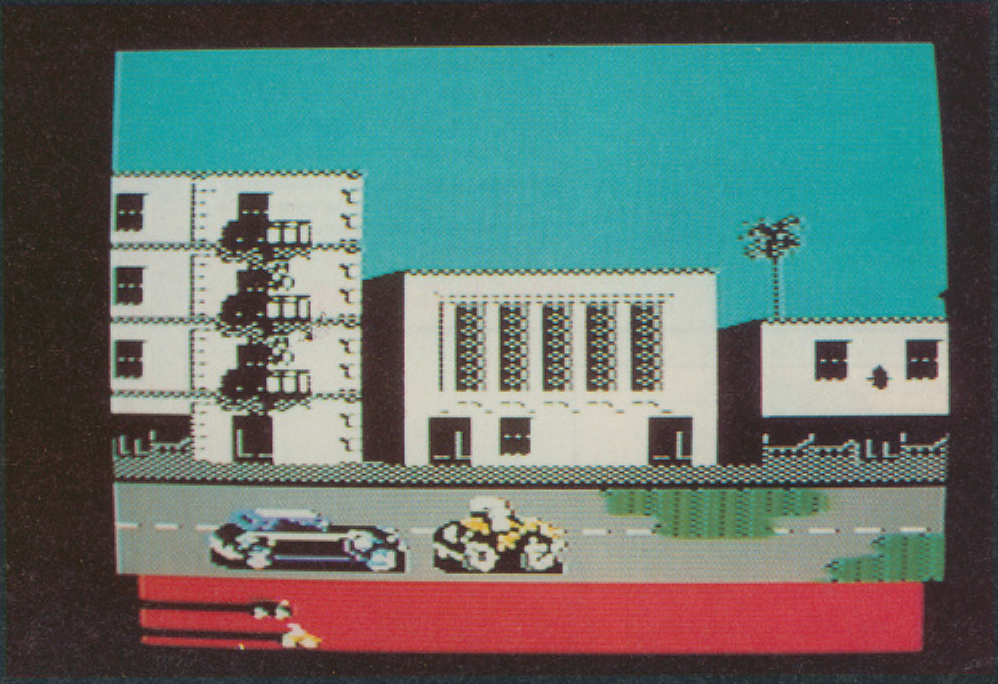
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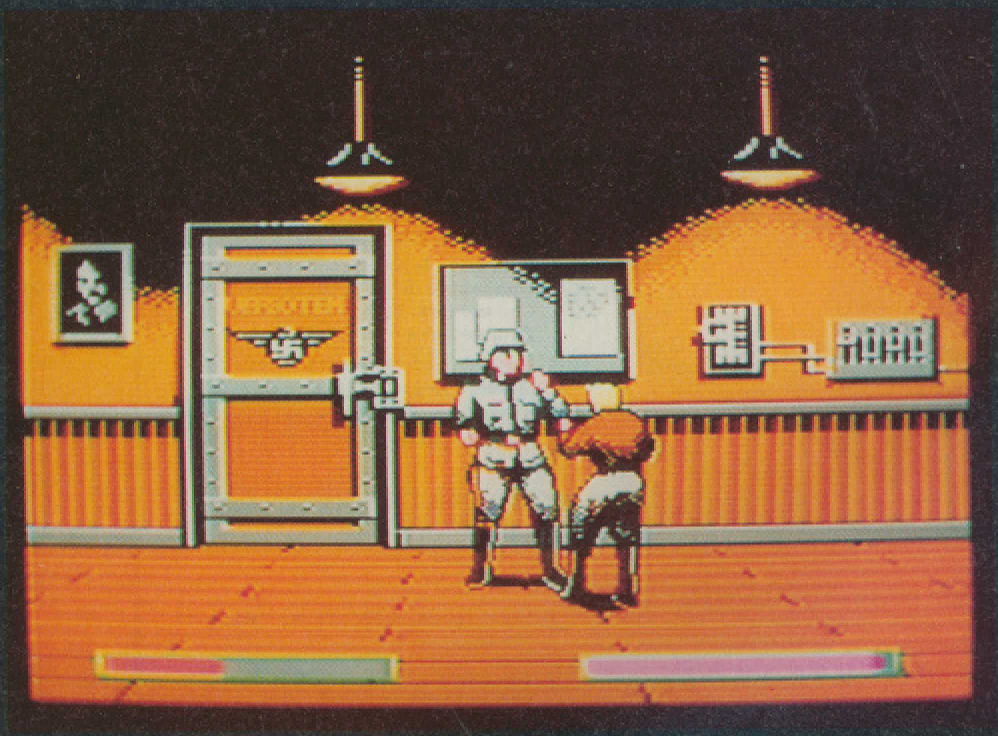
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ABC

Data Statements

Telecomsoft Sale

Telecomsoft, the company that hosts the Rainbird, Firebird and Silverbird labels, is up for sale. Rumours have been nibbling at our ears for a while and even now, with the probing tongue of confirmation beating on our eardrums, the reality of a sell-off is hard to bear. But wait, I'm starting to sound like one of Rainbird's novellas.

During the past five or six months, while suggestions of a sale were being repulsed by the company's upper echelons, Telecomsoft's general manager, Paula Byrne, and her team were putting their weight behind a management buy-out. Unable to reach a suitable agreement, the team has now conceded defeat and the company has been offered for sale on the open market.

Bids are obviously being kept a close secret, but the Mirror group, Activision and NEC have all been named as prospective buyers. A high price is expected for Telecomsoft, whose turnover amounted to almost £6 million last year, which is what one might expect from a company that boasts such a healthy presence in the budget market.

The only fly in Telecomsoft's ointment is the loss of a major part of Rainbird's software selection and development team. As reported in last month's *Data Statements*, Hibbard and company have defected to Microprose, which must leave their old label in a vulnerable position when a buyer is announced.

Thoughts of a split are being discounted by Ms Byrne, who recently claimed that the three labels together represented a winning formula as the best software house in Europe.

A Star is Bought

Compumart has announced that it will be stocking the Star Micronics LC10 printers following successful field trials. The Loughborough-based mail order company already stocks Citizen and Panasonic machines, but the price and quality of the LC10 mono and LC10-C colour printers have proved impossible to ignore.

In keeping with Compumart's standard practices, a starter pack worth over £30 will be offered with each printer sold. The pack comprises 1,000 sheets of paper, an interface cable for the purchaser's computer, and a spare ribbon.

Contact: Compumart, Jubilee Drive, Loughborough, Leics LE11 0XS. **Tel:** (0509) 610444.

Pumpkins with Garlic

Palace Software has signed a deal to distribute the software from a new French company, Delphine. Owned by millionaire playboy, Paul de Senneville (France's answer to Richard Branson), Delphine is an offshoot of an extremely successful music company of the same name.

Part of the attraction of the new software house is the reputation of its owner who, if reports are to be believed, is known as Goldfinger to the French national press because everything he touches turns to gold (funny I thought that was King Midas!).

The first products from Palace's new signing should be appearing just before summer.

Contact: Palace Software, The Old Forge Business Centre, 7 Caledonian Road, London N1 9DX. **Tel:** 01-278 0751.

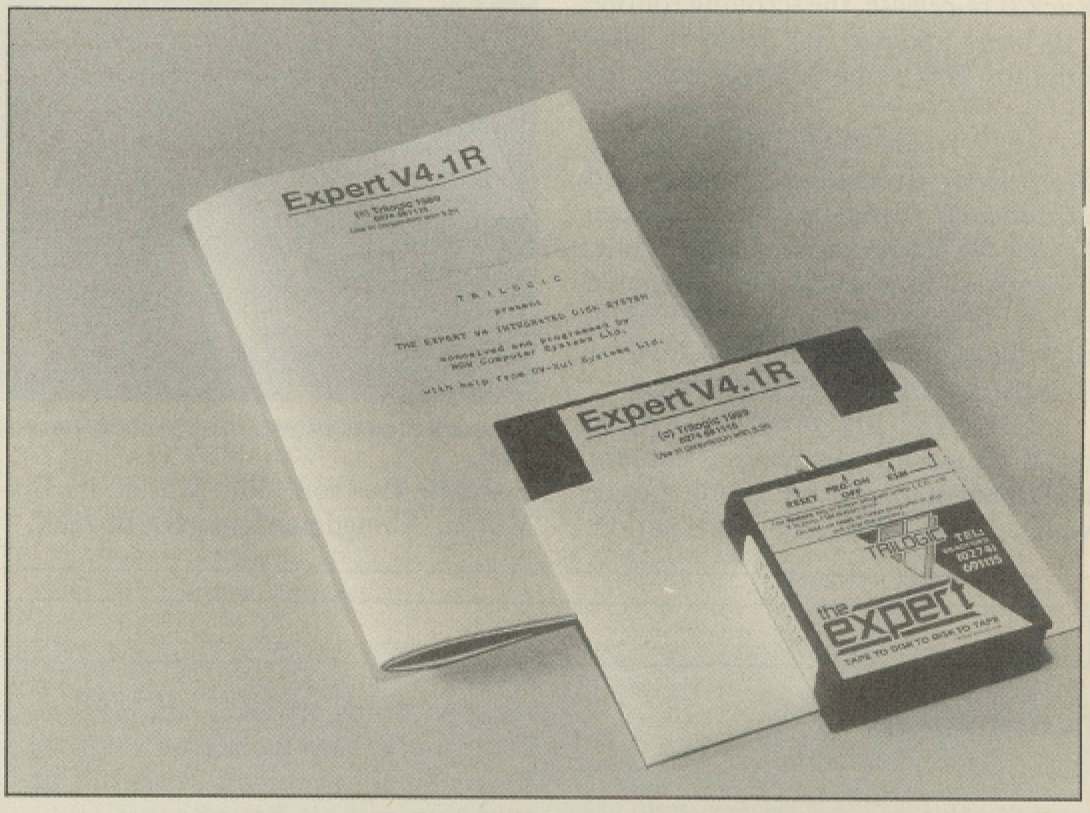
Enhanced Expert

Trilogic have just released an enhanced version of the Expert Cartridge operating system. For users of the cartridge and a disk system, the latest improvements mean that the cartridge can be reprogrammed while the original program is still in memory.

Some of the cartridge facilities have been improved, such as sprite and picture editors, which can interrupt a game and then return after the changes have been made, function key commands and bidirectional scrolling for the code monitor, and fully documented unlisted opcodes plus faster save routines.

The Expert Enhancement Disk V4.1R costs £9.99.

Contact: Trilogic, Unit 1, 253 New Works Road, Bradford BD12 0QP. **Tel:** (0274) 691115.



Slaying Competition

A wood just off the M42 may seem like a strange venue for an American civil war, but that is what happened recently when Microprose engaged Electronic Arts in a duel to the death.

Casualties were low as the opposing factions dashed from tree to tree armed with paint guns and goggles, and at the end of the day, Microprose was covered in glory while EA was covered in paint.

The 'friendly' war was played out in the battle zone owned by the Combat Game company, who ensured that no real harm came to the combatants. Perhaps EA's valiant but unsuccessful showing may have been due to an unconfirmed report that Microprose's ex-USAF boss, 'Wild' Bill Stealey, was preparing to do a supersonic strafing run to ensure victory.



The combined forces of Microprose and Electronic Arts

Of course, all this warlike activity couldn't possibly have anything to do with the fact that Microprose have bought the rights to *Universal Military Simulator II*, the updated and improved version of the battle simulator which was recently released by Rainbird.

Contact: Microprose, 2 Market Place, Tetbury, Glos GL8 8DA. **Tel:** (0666) 54326.

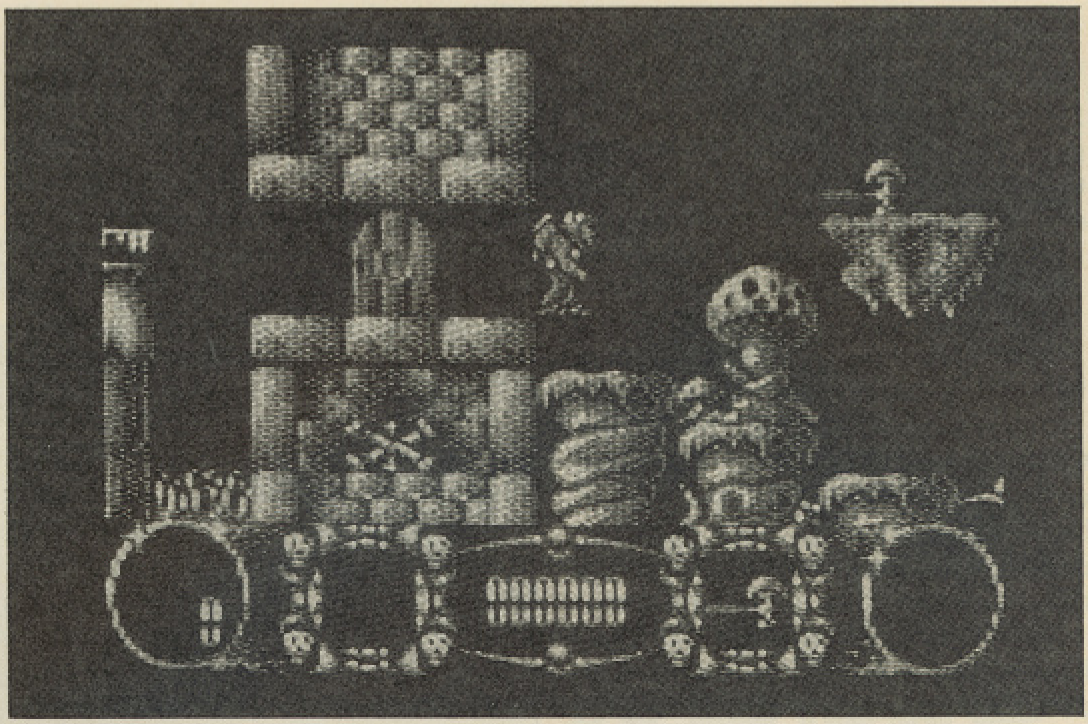
Electronic Arts, Langley Business Centre, 11-49 Station Road, Langley, Berkshire SL3 8YN. **Tel:** (0753) 49442. The Combat Game. **Tel:** 021-430 4049 or (0860) 619313.

Gribbly's Back

It's like meeting an old friend – Gribbly Grobbly has returned to the Hewson fold after an absence of five years or so. In *Gribbly's Special Day Out*, our one-footed Blabgorian hero treads where he has trod before, but this time he's a real smoothy. For this Rack'It re-release, the scrolling routine has been updated to make it ultra smooth. This game is a real cutie for £2.99.

Also fresh from Hewson are *Stormlord, Cyberdyne Warrior* and *Mazemania.* Raffaelle (*Exolon*) Cecco has set the scenario of his latest game, *Stormlord*, in a world of endangered fairies. Imprisoned by the evil Queen, Stormlord has to free the peaceful fairy folk before they are all wiped out.

Cyberdyne Warriors is a rogue droid round-up for bounty hunters, and *Mazemania* is an action puzzle which requires skill and coordination.



Hewson's **Stormlord** *goes in search of a queen and some fairies*

Contact: Hewson, 56b Milton Park, Milton, Abingdon, Oxon OX14 4RX. **Tel:** (0235) 832939.

Spirit Away

In the USA, the Free Spirit software house has been working away releasing several new products. MACH is an arcade game in which the player takes the role of a Manoeuvrable Armed Computer Human equipped with deadly hand rockets and protective armour plating.

On the serious side a graphics programming package, Basic 8, for the C128 should soon be appearing over here. The package operates in 80-column mode and adds 50 new graphics commands to allow programmers to produce effects such as windows, fonts, patterns and brushes. The package also includes a run-time library so that programs can still be used even without Basic 8.

To complement Basic 8 there is also a Basic 8 Toolkit. This extension adds a point and click operating environment to the host package and adds disk commands to the Basic extension vocabulary. There is also a program which allows Print Shop graphics to be loaded and enhanced.

On the slightly more offbeat side, there is ESP Tester which tests the user for powers of clairvoyance, precognition and telepathy. At the moment no British prices are available, but they'll no doubt be appearing soon.

PC Bundle

Commodore has announced that its MPS1230 printer is to be bundled with the PC10 III for the bargain price of £599 plus VAT. This is part of the new pricing structure (price cuts, to you and me) that the company announced recently, and shaves £80 off the previous cost of the PC10 III without the printer!

Similarly the entry level PC60 is now £550 cheaper at £1249 with proportional cuts upwards throughout the range. Students are to gain extra benefits as Commodore continues to chase the education market. In a special deal, National Union of Students members will get a free copy of Timeworks Publisher Lite DTP package with every PC20 III sold through Electric Distribution.

Contact: CBM (UK), Commodore House, The Switchback, Gardner Road, Maidenhead, Berks SL6 7XA. **Tel:** (0628) 770088.

Up, Up and Away

Star Micronics are sponsoring an attempt to fly a hot-air balloon over the world's highest peak, Mount Everest. The attempt will be made in autumn by Per Lindstrand and Chris Bonnington.

Bonnington is no stranger to the 29,028 ft high mountain after his successful attempt at becoming the first man to climb its south-west face in 1985. Lindstrand is a vastly experienced balloonist whose most celebrated feats have been the first transatlantic crossing in a hot air balloon (with Richard Branson in 1987) and gaining the altitude record the following year, reaching a height of 65,000 feet.

The third member of the team is cameraman Mark Jerrold, who will be recording the incredible feat for posterity.

Contact: Star Micronics UK, Craven House, 40 Uxbridge Road, Ealing, London W5 2BS. **Tel:** 01-579 2259.

Wrong Data

In the March edition of *Your Commodore*, we mentioned MDS Industries' PC Trolley which is designed so that a computer mounted upon it can be pulled over any standard height desk. Unfortunately, the phone number got slightly mangled. Our apologies to MDS and here is their correct number (0442) 231305.

Toys for Tomorrow

We sent our toy boy out to scout around the Toy & Hobby Fair

By Alan Batchelor

This year's British International Toy & Hobby Fair was held at the Earls Court Exhibition Centre, and it needed a venue of that size to comfortably accommodate the vast number of stands.

Everything you'd expect was there, ranging from fluffy *Count Duckulas* to Japanese super-heroes and, of course, hi-tech executive toys. There weren't as many electronic gadgets as I'd expected, but the ones that did appear were of a high quality indeed.

Bandai, as expected, had a veritable squadron of radio-controlled cars, and some of them wouldn't have looked out of place on the *Star Wars* set! Apart from these cars, there were also quite a few hand-held games. These were principally sports games and included soccer, volleyball, car racing and tennis. In style, they ran along the lines of those game'n'watch toys that you get at Sunday markets for a couple of pounds. I preferred their *Cat'n'Mouse* game, though I doubt that Warner Brothers would appreciate how much the cat resembled Sylvester. There were three shooting games, too: *Space Force, Tank Shooting* and *Defensive Gun*. I didn't get to play them, but the only difference appeared to be what you used to shoot with, and what you shot at.

Much more exciting was Bandai's *Video Challenger*. This set contains a futuristic-looking gun and a video cassette. Just put the tape into your recorder and off you go. This reminded me of the *Captain Power* toys – interactive television, they call it. The tape shows a jet zooming all over the place, and surprise, surprise, you have to shoot it. Try as I might, my score stayed firmly at zero. Your score doesn't appear on the screen but in a small panel just below the sights on the gun. The video itself seemed to be almost of laser disc quality. I'd really like to see this take off, (no pun intended), as the idea is well executed and, for we satelliteless unfortunates who aren't able to watch *Captain Power*, it's an admirable substitute. To make it successful, though, Bandai will need to expand the range of tapes. There are, apparently, two more tapes to be had: *Monster Maze* and *Chase*. I couldn't find them, so whether they're up to the standard of the first one remains to be seen.

At the VTECH stand the emphasis was firmly on education. There was a wide range of pre-school toys on show, bright and colourful, with lots of noises and buttons to push. *Small Talk* is a brightly coloured telephone with a different picture on each button. By pushing the relevant button, the caller is put through to the person shown. All the obvious ones are there, such as Mummy, Daddy and Policeman, as well as those who might not spring to mind so easily (have you ever talked to an astronaut?). These characters will call back when the receiver is replaced. There are also buttons with animals on that make the relevant noises and a small musical keyboard. I'm sure parents are going to love their kids playing with that during the film they've been waiting to see.

School Bus comes with eight blocks which fit into the side of the bus. The bus asks a question and Junior has to put the correct blocks in the holes. The questions are the standard numbers/letters/animals sort.

Talk Board is for slightly older children, and it's shaped like the old *Speak and Spell* toy. Again it asks the usual questions, but you also get an electronic boardgame to play.

Yet another talking toy is *Mother Goose Caboose*. It comprises a Wild West-style engine and a truck. The Mother Goose bit refers to the four nursery rhyme characters that can be put onto the engine's roof. Each plays a different tune and there are four blocks, similar to the School Bus ones, to complete the set.

When I was a boy we used to have a plastic steering wheel on the end of a plunger. In the middle of the wheel was a red button. When pushed, it let out a faint squeak. You could stick the whole thing on to a chair and drive round all day without leaving the room. VTECH have updated this idea and improved it no end. *Talking Little Busy Driver* allows the little dears to listen to eight tunes on the car radio and five types of siren. There are working indicators, a gear stick and, for puppy yuppies, a carphone. Add this to the alphabet and shapes that are on the dashboard and you've got enough to keep even the most easily bored kid happy on a long journey. The whole thing can be attached to a high chair or side of a cot by two Velcro straps. Why didn't we have them in my day? It is rather expensive though, at just under £40. That's almost a pound in old money. They don't know they're born today.

Wizard and *Mini Wizard* are 'follow me' type games. Who remembers *Simon* from a few years back? These, however, have a maze game incorporated into the fun.

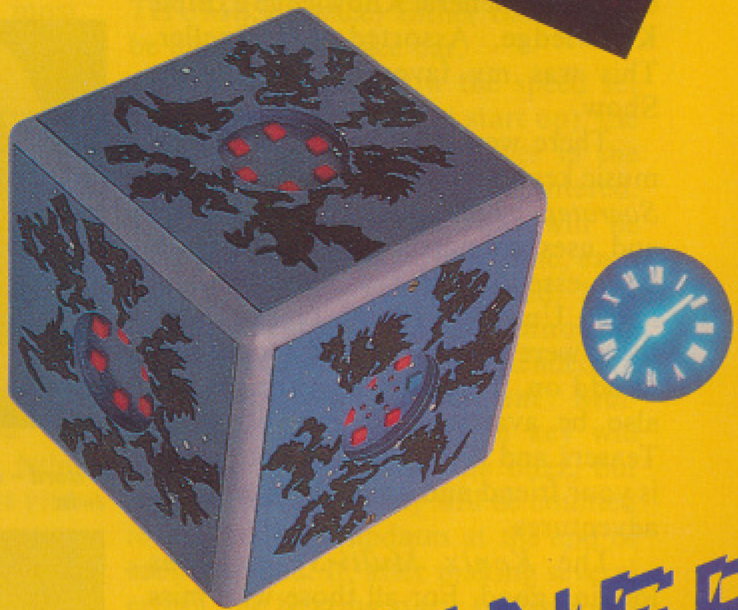
Naturally, there had to be at least one sports game and VTECH deliver three. *Talking Rallyracer, Soccer* and *Baseball*, to be precise. They all look good and all have effective, if simple, graphics. *Soccer* and *Baseball* boast a 'realistic announcer's voice'. *Rallyracer* has 'true to life' sound effects.

Pinball Wizard, Spaceblasters and *Battleship Command* also have the 'Talking' prefix. *Pinball* and *Spaceb-*

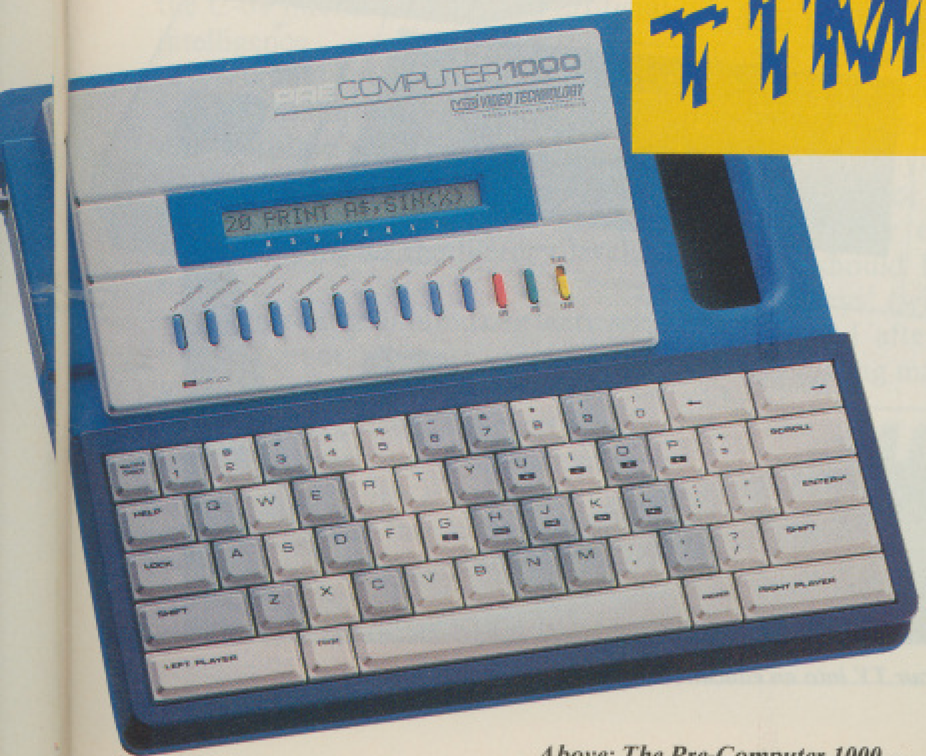
LOONY LETTERS

Below: TROi – an ingenious new puzzle





TIME RUNNER



Above: The Pre-Computer 1000 – definitely the business!



Above: The Konix Multi-System Light Gun – a must for all embryonic psychopaths

lasters are logical choices for this type of game – but *Battleships*? My doubts, like my ships, were soon laid to rest. A good game for those with some spare cash.

Pre-Computer 1000 is the business! The top half contains a narrow screen, and just below that a range of buttons which are used for selecting your chosen subject including science, geography and history. Below these is a QWERTY keyboard – just choose your subject, pick a level and off you go. The questions are by no means easy. On level three I got only half the questions right, so a feature I appreciated was the HELP button. You start off with two lives and each time you ask for help, the computer gives you one letter of the answer. On the third help, it tells you the solution. There are to be a further five question cartridges. I can't wait for my specialist subject, Fantasy Trivia, to appear. The others are General Knowledge 2, Bible Knowledge, Assorted and Speller. This was my favourite item in the Show.

There were also had a number of music keyboards and something called *Socrates,* which connects to your TV and uses animated graphics to teach basic essentials to kids aged five and above. Unusually for this type of thing, there were touch pad and mouse sets to add on. Three extra cartridges will also be available: Pre-school, Brain Teasers and Awareness. A cute robot is your friend and guide through these adventures.

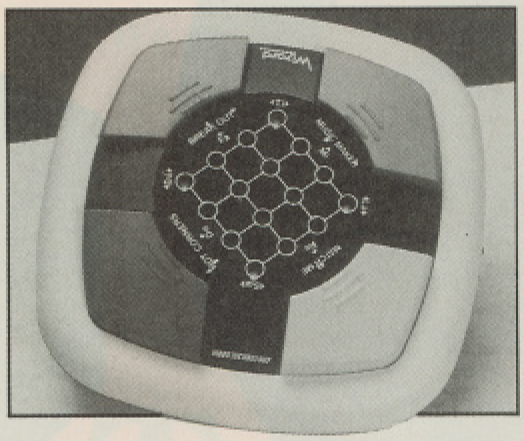
The *Konix Multi-System* was looking good. For all those who miss the hydraulic fun of *Super Hang-On* at your local arcade, the Power Chair is for you! It tilts, banks and generally moves in synchronisation with your joystick. It comes with a seatbelt, and you mount your monitor on the chair, presumably so that when you turn a corner, you can still see the screen. This is all well and good, but how many people have got the space for one of these? The Light Gun is much more sensible. Resembling something Dan Dare might use, it has a recoil action and auto fire. Surely anyone who uses auto fire will be bounced all over the room like a squash ball..? Anyway, there's a neat add on to convert it into a rifle, if you want.

Two weird little games from Elfin Design caught my eye. *Troi* is a plastic sphere with a small gap at the base. Inside the shell is a ball with a maze engraved on its surface. The idea is to manoeuvre the ball so as to get a little red light from one end of the maze to the other. Having seen someone try and fail dismally to complete it, I wasn't keen to make a public fool of myself. It will keep you busy during those cold summer evenings and is excellent fun.

Timerunner. What a name! What a game! It looks like a cube, roughly six inches square. On each side there are six silhouettes of elves. They're repeated randomly on each side. When turned on, a set of lights shows the order that the shapes must be touched to win. When the first one's completed, it's onto shape two, and so on. There's a time limit, naturally, and it seems generous until you realise that a mistake means starting over. In this case, mistake means not only touching the wrong shape, but repeating a move. Unless it's switched off, it will remember the fastest time. While I was there, one of the Elfin Design people completed it in what seemed like only seconds. For us mortals it'll take much longer. I love this so much I wanted to marry it.

Ever heard of Nuvue? Neither had I but soon you will when *Loony Letters* appears in the shops. It's an animated word game. You get a video tape containing cartoony letters. They appear every five seconds, and when fifteen have jumped up you have fifteen seconds to make the best scoring word you can. Things don't always go your way – occasionally a whistle sounds and you have to exchange score sheets wtih the other players. That means even the editor could win a game like this. The game comes from Australia – maybe by way of an apology for *Neighbours*.

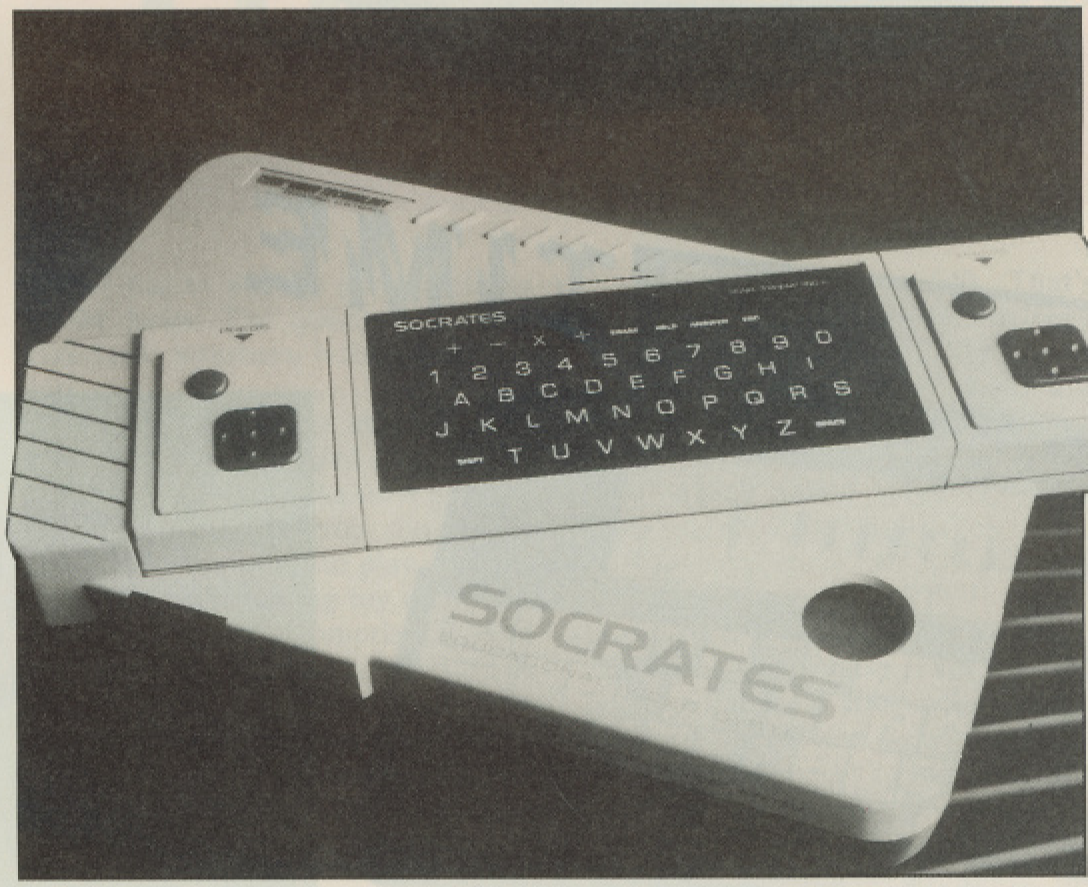
There you have it. Lots of fun and I hope these toys all get British buyers. It'd be a shame not to see them take off over here.



Wizard – a 'follow-me' type game, but with a twist



Small Talk from Vtech – a clever pre-school game



With Socrates, you can turn your TV into an educational toy



Turbo Touch

Are you a two-fingered typist? Could a tortoise write more words per minute. If so, 'Turbo Touch' could change all that

As the name suggests, this utility is designed to turbo charge your typing ability. If you practise frequently with 'Turbo Touch', you should be able to accelerate your tempo to exceed 300 keys per minute and reduce your error rate to less than one percent, which is not bad for a program written entirely in Basic. 'Turbo Touch' also features multi-colour graphics, sound effects, perpetual feedback (measured against the C-64 internal clock), and artificial intelligence.

Artificial intelligence in this context means the ability to read, interpret and translate any given text into key strokes for practise purposes. In other words, 'Turbo Touch' can be customised according to the literacy level of the user.

Even young children can learn with this program, because parents and school teachers can make the exercises very easy if necessary. It's even possible to create exercises in other languages, as long as they use the same alphabet as english. Such flexibility makes this program feasible for use by a very wide range of people, and the variety largely eliminates the inevitable boredom of repeatedly typing 'The quick brown fox'... etc., which is typical of most other typing tutors.

USING 'TURBO TOUCH'

There will be two prompts when you start up. The first asks which exercise you want to load. You may select one of three prefabricated ones – all finger, cap letters and practise text, or a previously customised exercise. The second prompt asks how many keys per minute should be allowed before eliminating the help function which highlights the keys you must press. Help is allowed up to a maximum of 150 keys per minute: above that the keys will only be highlighted to correct mistakes.

The 'all fingers' exercise shows all the proper finger positions needed to become a proficient touch typist. You'll need to practise often with 'all fingers' (or a similar self-made exercise) to develop coordination. Once an exercise is loaded, the computer screen displays a keyboard with all black keys, except for the 'home keys' which are blue (for easy reference). Your fingers should be rest lightly on the 'home keys' (without pressing them) before and after each key stroke, in the following manner:

LEFT:	(A) Little Finger	**RIGHT:**	(J) Index Finger
	(S) Ring Finger		(K) Middle Finger
	(D) Middle Finger		(L) Ring Finger
	(F) Index Finger		(:) Little Finger

THUMBS: (space) Either thumb can be used on the space bar.

When you're below the speed set in the second prompt (at start up), the keys will highlight themselves in the order in which they must be entered. The colour of the text line will be changed one character at a time, each time the correct key is entered. Mistakes will result in an annoying buzzing sound, which is intended to act as 'negative reinforcement'. Multiple mistakes on the same key will continue to sound off the buzz, but only one error per key will be counted in the feedback updates at the end of each text line. If, after making several errors, the buzzing starts to drive you goggle-eyed, then just lower the volume.

Once you're familiar with the 'home keys', the rest is relatively easy. The remaining keys need only be learned in terms of how many keys above, below or next to the 'home keys' they are. The only extra thing you'll still have to learn is using the SHIFT keys for capital letters and certain symbols and punctuation. SHIFT-ed characters should be entered using one hand to press the character key, while the little finger of the opposite hand holds down the SHIFT key (on either

side of the keyboard).

'Turbo Touch' keeps track of the total keys, total errors, and total time elapsed since the file was loaded. Using this information, the program updates the error rate and the average number of keys per minute each time one full line of text has been processed. A typewriter–like 'ping' sound is used to indicate that the end of line performance feedback has just been updated.

CREATING AN EXERCISE FILE

There's nothing to it. LOAD and RUN 'tt/file maker', and just start typing whatever you like. The file maker works like a simple word processor: DEL deletes, RETURN goes to the next line, and the F2 key saves the file under a name to be specified by the user.

The DEL key is able to back trace the entire 40 line length of the file if necessary, but it's a good idea to double check for mistakes, so that you don't have to delete too many lines to correct them if you don't notice them till much later. The DEL key is also useful when words are cut off at the ends of lines. In that event you can delete the partial word, and then press RETURN to go to the next line and enter the full word.

After saving a file, you can make as many copies as you like and the program will automatically name another file by changing the last few characters of the file name to indicate the copy number. You don't have to bother with copy numbers yourself, since file names can be abreviated (example: 'abc copy 3' is the same as 'abc*').

GETTING IT ALL IN

There are three programs associated with Turbo Touch, and these are as follows.

TURBO TOUCH – The main program
TT/FILE MAKER – An editor that allows you to create your typing exercises
TT/SCREEN MAKER – A program that saves out the intro screen used by TURBO TOUCH.

All of the programs are in Basic and should be entered and saved using our easy entry program (See listings pages for more details). Each program should be entered and saved to disk seperately. The program TT/SCREEN MAKER when RUN save a new file out to disk called TT/INTRO SCREEN. Once this is on your disk the program TT/SCREEN MAKER is no longer required.

The finished Turbo Touch suite of programs should now consist of:

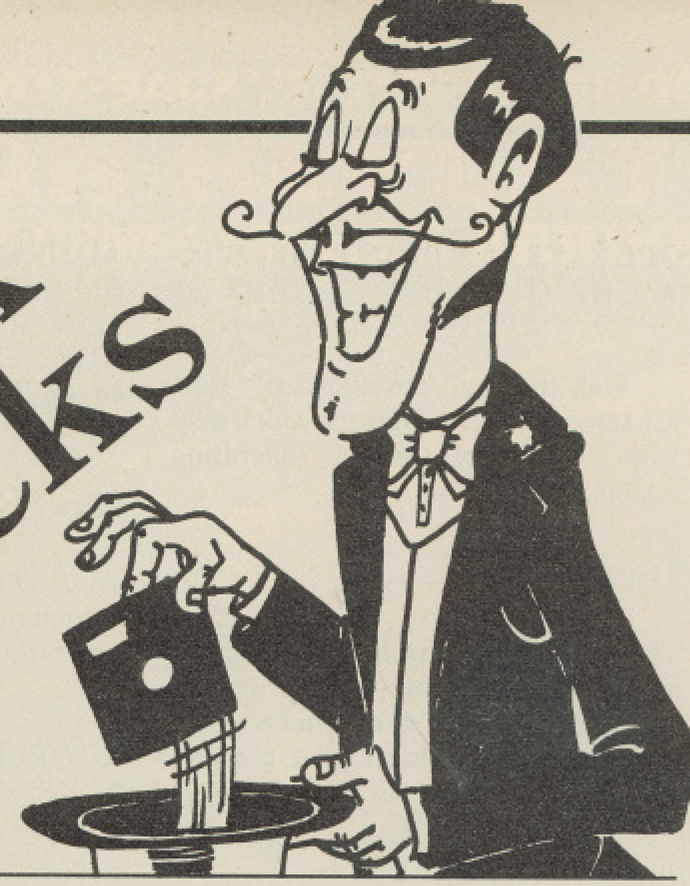
TURBO TOUCH
TT/INTRO SCREEN
TT/FILE MAKER

Once you have these programs you can start creating your typing exercises. You should load and run the program TT/FILE MAKER in order to create your test files. You will not be able to use TURBO TOUCH until you have created at least one test file.

Software For Sale

Should you purchase software through our Readers Services department then you will find that a number of exercise files have been included on the disk. Unfortunately lack of space prevents us from including them here.

Disk Tricks



There's a lot more to Commodore disk drives than first meets the I/Q

Contrary to what you may believe, Commodore disk drives are the most powerful available for any 8-bit computer. They have a comprehensive built-in DOS, RAM, ROM and 6502 processor. It is the software support of the C64 that lets the system down. Under the control of certain cartridges, the 1541 even outstrips the BBC drives.

This article contains a selection of simple programs and hints which you don't usually find in Commodore's manual.

Easy loader

Before today, you have probably loaded in the directory to check on a program name. You may have cursored up and put LOAD before the filename and ,8 after it – this is useful, but also time consuming. This method allows you to put ,8 or ,8,1 after the name in the directory entry when you are saving the program. By loading the directory, moving to the correct name and pressing SHIFT and RUN/STOP, you will be able to load your program quickly and easily. This is even better if you have an extended Basic with a directory read facility installed.

SAVE" FILENAME<SP> [D] 8<@>",8 adds ,8:
SAVE"FILENAME <SP> [D] 8 [D] 1",8 adds ,8,1

SP = shift + space
[D] = Commodore key + D
= shift +

The only restriction about this method is that filenames must be 11 characters or less.

Save and Replace

I'm sure that you have heard the rumours of this function scrambling disk, yet it is one of the most important of all disk facilities. Apparently, the problem is caused by omitting the drive number. This is a hangover of double-disk systems, where the two drives were assigned the drive numbers 0 and 1. Any Commodore single drive is 0 and omitting this number causes the drive to ignore some of the available buffers, corrupting the disk when there is a lot of shuffling of files to be done.

The solution is always to include the drive number:

SAVE"@:PRGNAME",8
becomes
SAVE"@0:PRGNAME",8

This method has never given me any problems.

Scratch one character files

Sometimes, due to a typing error, you get an unwanted file on disk with only one letter in the name. No problem, scratch it. Wrong, it won't scratch. The solution is:

OPEN15,8,15,"S:?":CLOSE 15

Selective Directories

Commodore DOS allows you to view specific parts of the directory, as well as the standard directory. When pattern matching and wildcards are used, it becomes a powerful command, allowing you to check a disk for a particular program. Here are some examples:

LOAD"$:NAME",8
– lists only NAME's entry
LOAD"$:CO*",8
– lists all entries beginning with CO
LOAD"$:*=S",8
– lists all sequential files
LOAD"$:MUSIC*=P",8
– lists only programs beginning with MUSIC
LOAD"$:??64",8
– lists all four character files with 64 at the end

Software Speed-up

This allows small speed increases with the scratch, validate and rename commands by speeding up the movement of the head between tracks.

OPEN15,8,15: PRINT # 15, "M-W" CHR$(7) CHR$(28) CHR$(1) CHR$(15)

Unobtrusive Load

You will, no doubt, have found it annoying that there is no easy way to load a program from inside another program without causing the program to re-run. This method calls the Kernal routines directly so that the load will be executed only once, and the program will continue from the correct line after the help screen, machine code or similar feature has been loaded.

POKE147,0: SYS57812"NAME",8,1: SYS62631

Rescuing Unclosed Files

I'm sure you have come across this problem. When accessing a file, an error stops your program, or the computer is switched off by accident. Most of the data has been transferred to disk and should be easy to retrieve. Strangely enough, when you try to reopen the file, you get a WRITE FILE OPEN error. Examining the directory reveals an asterisk beside the filename. This means that the file was not properly closed and is therefore useless. An undocumented command to the rescue! This allows you to open the file and retrieve as much of it as

possible using INPUT # 5 or GET # 5

OPEN,8,5,"FILENAME,M"

Append

If you are manipulating sequential files, particularly in databases, then you know that the only way to add information to an existing file is to reload the whole thing, add the new info and resave. The DOS provides an easy way of adding this information with the minimum of work. The DOS can reopen the file, and tack the extra information on the end of the existing file. Note that this is only an append and, as such, will not correct information in the middle of a file. Nevertheless, it saves considerable time when no alterations need to be made to the first file.

OPEN5,8,5,"FILENAME,APPEND"

Copy and Concatenate

This is a very under-used command, as it usually only creates the same file on the same disk under a different name. Even with this limitation, it can still be useful. For example, when using a database or wordprocessor you could copy a saved file as "BACKUP" and allow this to be recalled as an 'Oops' option in case of an irrecoverable mistake. The syntax is

OPEN15,8,15,"COPY: NEWFILE = OLDFILE"

Copy also allows you to append files that are previously stored on disk, infinitely useful for a wordprocessor:

OPEN15,8,15, "C:TOTAL = FILE1, FILE2, FILE3"

Reset Drive

This command will reset the drive completely, as if it had been just turned on. The device number and computer type will be reset.

OPEN15,8,15, "UJ": CLOSE15

Change Device Numbers

This allows the standard disk drive (device 8) to adopt a different number, which is essential if you need to use two drives at once. NM is the number that you wish to allocate to the drive (usually 9).

OPEN15,8,15: PRINT #15, "M-W"CHR (119) CHR$ (0) CHR$ (2) CHR$ (NM+32) CHR$ (NM+64)

Well that's all the quickies – now for some meatier programs which deal with features of the C64 operating system.

Directory

This compact program can be used as a subroutine in your Basic program, or during program development. Any business program must have a directory read, and this is as good as any.

```
10 OPEN 1,8,0, "$"
20 GET # 1,X$,X$
30 GET # 1,X$,X$,X$,X$
40 IF ST THEN CLOSE1:
RETURN
50 GET # 1, X$: IFX$ = ""THEN
PRINT: GOTO 30
60 IFX$ = CHR$ (34) THEN P =
NOT P
70 IF P THEN PRINT X$;
80 GOTO 50
```

Blocks Free

This scans through the directory until it comes to the BLOCKS FREE statement, and puts it into BF. This can be useful for the user to find out how much space there is on the disk. Also, if you know the length of the file you are saving, you can check to see if there is enough room on the disk before you start saving.

```
10 OPEN 10,8,0, "$$"
20 FORJ = 1 TO 35: GET
  10,X$:NEXT
30 GET  10,Y$:CLOSE 10
40 BF = ASC (X$+CHR$(0)) +
256*ASC (Y$ + CHR$(0))
50 PRINT BF "BLOCKS FREE":
RETURN
```

Block Save

Most people know that altering the Basic pointers at locations 43-46 allows any block of memory to be saved. This has its drawbacks because it wrecks your Basic program. The below method is useful if you have to save graphics data from within a program.

```
10 SYS57812 "FILENAME",8,1
20 POKE193,0: POKE194, 48:REM
LOW/HIGH BYTE OF START
ADDRESS
30 POKE 174, 0: POKE175,64: REM
LOW/HIGH BYTE OF END
ADDRESS
40 SYS62957
```

Block Load

This method does not alter the Basic pointers like the normal ,8,1 suffix, which gives an ?OUT OF MEMORY error.

```
10 OPEN1,8,1, "FILENAME,P,R":
POKE780, 0: SYS65493: CLOSE1
```

Load Address

It is often useful to find a program's load address because it gives a clue as to what the program actually does. Use the following:

```
10 INPUT"PROGRAM NAME"; N$
20 OPEN2,8,2, N$ +",P,R"
30 GET # 2,X$,Y$
40 PRINTASC (X$ + CHR$ (0))
+256*ASC (Y$ +CHR$(0))
50 CLOSE2
```

Device Indicator

There's a handy location that gives the device number which was last used. In practice, this means that programs can tell if the user loaded with tape or disk, and which disk it was. D=PEEK (186) will store the device number in D.

Keep track of files

Using several files can sometimes become messy, especially when they all have to be closed in a complex program. SYS 65511 closes all files, and is useful if an error condition occurs. PEEK (152) will give the number of active files at any time.

Last filename

SYS 62913 will print the name of the latest file that has been loaded. It uses parts of the SEARCHING FOR message routine. Naturally, if this routine has been disabled, then this hint will not work.

That should be enough quickies for you. Prepare yourself for further disk delights in the near future.

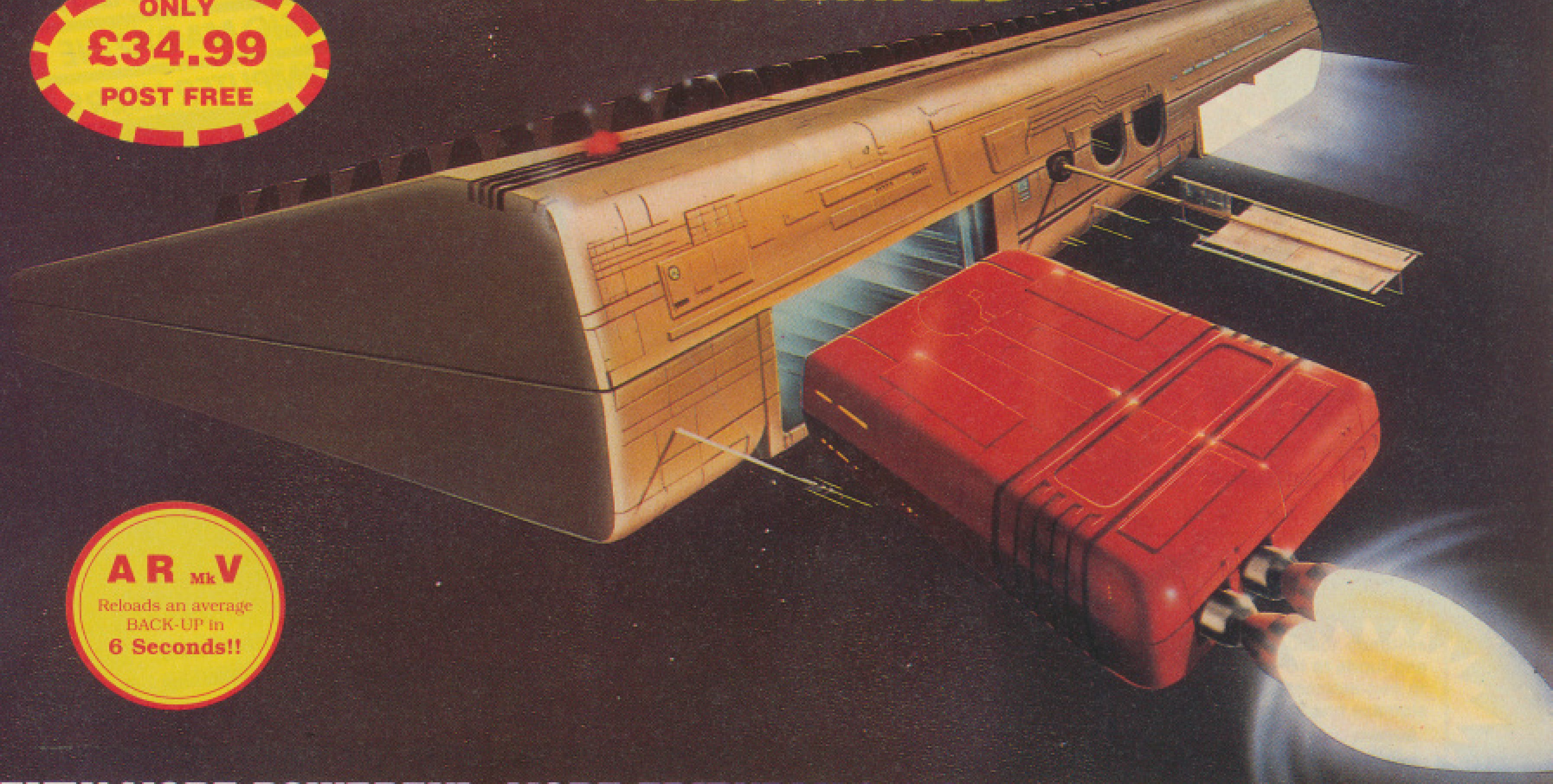
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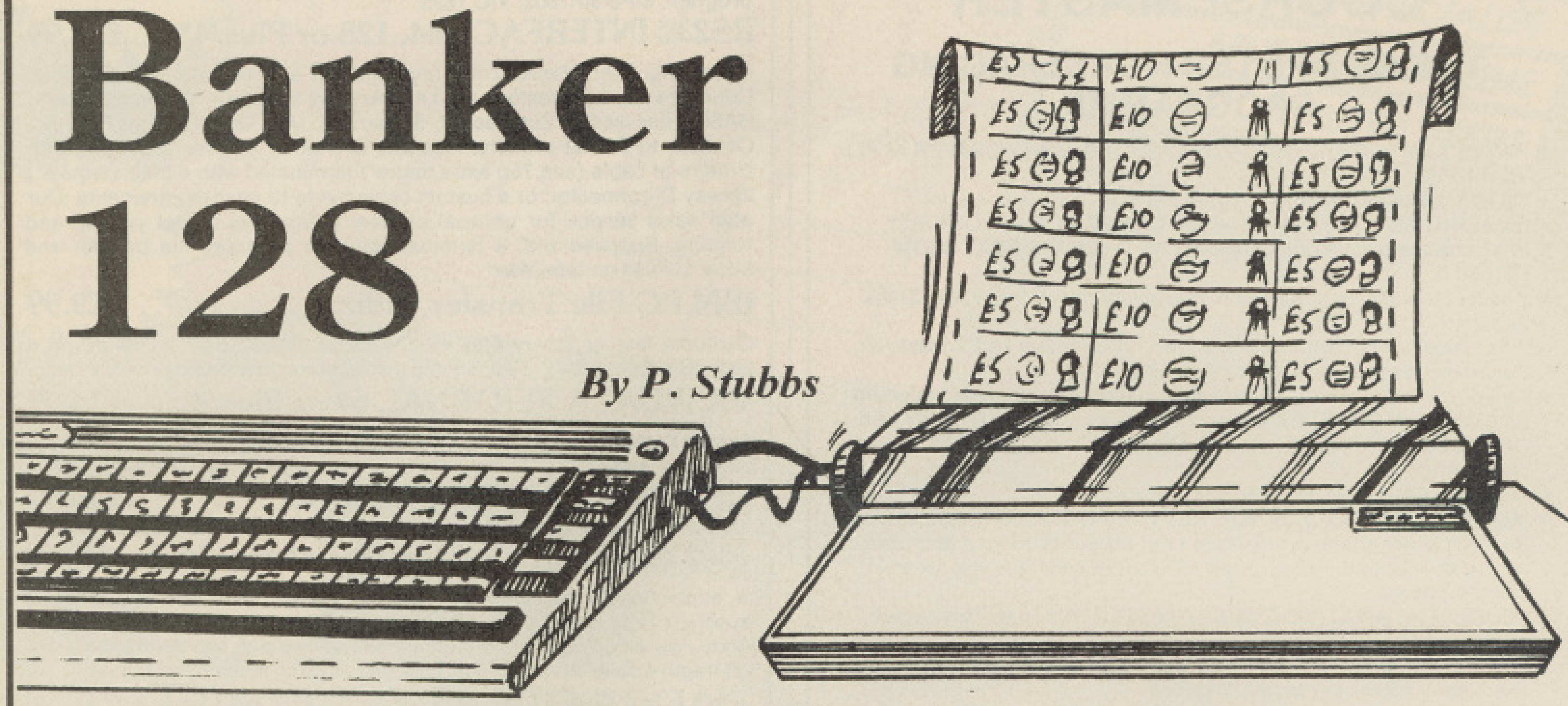
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Banker 128

By P. Stubbs



Keep your personal finances on a tight rein with new financial program

This program is designed to calculate, store, and display your bank account details. This is done by entering in the details of your account(s), and then saving them in the form of a sequential file. On re-loading this file, you can then simply update (or add on) from where you left before. The Banker program will also print out bank-style statements showing up-to-date account balances. Banker is designed to work with a Commodore-style printer, and most other printers that use channel 1,4.

Getting Started

First you need to form a P.I.N. code. On loading you will be confronted with the loader screen. At this stage, (as you are using this for the first time) you must enter [left arrow]. You will find this key located at the top right-hand side of your keyboard – enter this key and press [RETURN]. You are now asked various questions regarding your personal use of Banker.

First you are asked to enter a P.I.N. code. This can be any code you wish to enter that the computer will then use as a filename for your personal details. (Please note that this code is not intended as some form of security procedure, simply a filename to save time on entering personal details on future loadings). Enter your P.I.N. code followed by [RETURN]. You will now be asked to confirm it – if it's correct, simply type "Y" for yes.

The next question is, how many accounts do you intend to use this program for (BANKER can be used for up to ten bank accounts). For the purpose of this demonstration type 1 [RETURN]. You are now asked to input the year. You will see that "88" has been entered in for you – if that is the correct year, simply press [RETURN], if that is not the correct year then tap in '89 or whatever the year is and [RETURN].

Account Details

You are now in the accounts field, and are looking at the words ACCOUNT 1. This is the account we are going to answer questions on first. The first question is NAME OF BANK – please do not use any punctuation in your reply. Now answer the questions ACCOUNT TITLE and FILENAME FOR THIS BANK. This is the file-name the computer will give to your completed account file, so as to save it for future use. Any filename will do, (except the filename you have already used as the name of your P.I.N. file).

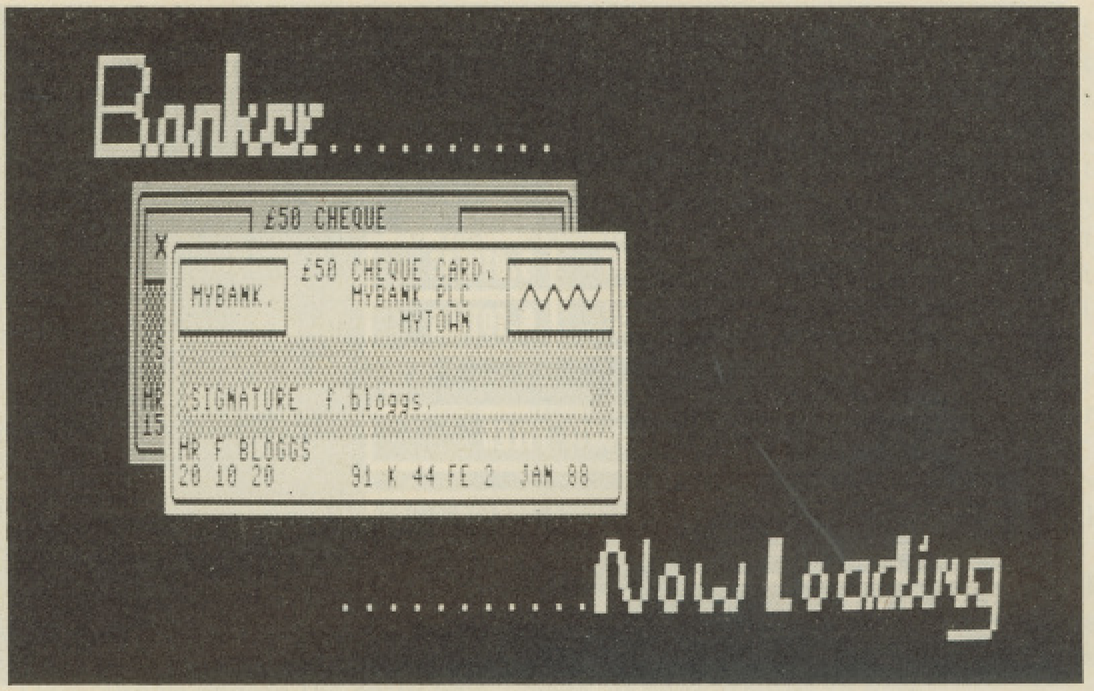
Next, you're asked about standing orders, the cost per month, when you first started paying the order, and for how long the payments are to last. (The computer needs this information to calculate when the payments end, and therefore when to start deleting them from your files). If the order is of the permanent kind – for example, a standing order to the Gas Company – and therefore carries on regardless, enter S at the question "IS THIS A STANDING ORDER OR A REPAYABLE LOAN (S/L).

Confirmation Mode

If you're using this program for more than one account, you are now invited to go through all the details again for ACCOUNT 2 and any subsequent accounts. Since for the sake of this demonstration we are only using one account, we now move into the confirmation mode. The computer will now run through your answers so you can confirm them. If there is a fault in the details, answer N at the question CORRECT (Y/N) and you'll be returned to the start to correct your mistake. If they are correct, answer Y and a file will be formed with your new P.I.N. code. You are now back at the loader screen – tap in your newly formed P.I.N. number, and the computer will load your file into the memory.

On subsequent loadings of this program, the above procedure need only be followed if there are any changes to your personal details. If there are no changes, simply type in your P.I.N. code.

Before we can enter the MASTER MENU, there are still a few questions to answer. The answers to these questions have already been filled in for you, using the information from your P.I.N. File, so all you are doing



for the most part is confirming the answers.

The year has been entered for you, leaving you to input today's date. Please ensure that you use the correct format (01.01.88) when entering the date.

There is one question in this field where (as you are a first time user) the answer has been entered incorrectly. This is the question which asks;- "ARE YOU LOADING THE FILE FOR THE FIRST TIME? The answer NO has been entered, whereas we are in fact loading the file for the first time, so you'll need to change this answer to YES.

After completion of these questions, you will encounter another confirmation field – if you have completed the answers correctly, answer Y for yes. You are now into the Master Menu.

The Master Menu

There are six options at the top of the Master Menu screen – Cheques, Cashpoint, Bank Orders, Payments, Totals and Others – And five options at the bottom – Save to disk, Update files, Change entry, Printer option, and End of run. We are now going to deal with the top six.

Press the [1] Key, for CHEQUES, and you will be faced with the CHEQUES MENU.

You will see you are faced with three options on the cheque menu – as option three is self-explanatory, we will deal with the first two.

OPTION 1: Press the [1] key, for MAKE AN ENTRY, and you will be faced with the CHEQUES ENTRY MENU – simply answer the questions CHEQUE NUMBER, DATE, AMOUNT, and ITEM. On the cheque number it is advised for simplicity that you enter the last three digits of the number instead of the whole number. When using it for the first time you'll find a '1' has been entered for you – just type over this, as it is for your next entry, where it will show your next cheque number (just so long as your cheques go up in ones!). When filling in the date, it is the date that the cheque was cashed on that is needed, and please remember to use the correct format. On filling in the amount, do not use the '£' sign.

When all the cheques to date have been entered, depress the [F1]. This can only be done once you have returned to the 'CHEQUE NUMBER' mode.

OPTION 2: After exiting the ENTRY MODE, you will automatically be taken into the VIEW MODE. After viewing your entries, hit any key and you will be returned to the Master Menu.

CASHPOINT AND OTHERS: The exact same procedure is repeated for both the CASHPOINT and OTHERS options. In the OTHERS mode you will see that under ITEM, cheque book has been entered in for you automatically – this is because this is the sort of item the OTHERS field has been designed for, deducting the banker's charges for a new cheque book, or basically anything that is deducted from your account, other than cheques, cashpoint entries, and standing orders. If your OTHERS entry is not for "cheque book", simply type your item in over "cheque book". Please remember to erase any remaining letters of "cheque book" should your item be shorter.

OPTION 4: On entering this field you will be faced with a slightly different menu. Option 1 is used for viewing all of your bankers orders on a separate sheet (this sheet is not calculated with the rest of your account and is for viewing only). On leaving this option you will find yourself back at the BANK ORDERS MENU.

Option 2 is a very powerful option that will calculate all your bank orders for this month. On subsequent loadings of the file, this option will check the date of the loading and decide whether more orders need to be added or not. It will also take into account when a standing order has finished (using information given about that order in your P.I.N. file), and enter a "CANCELLED" entry for that order from that date on.

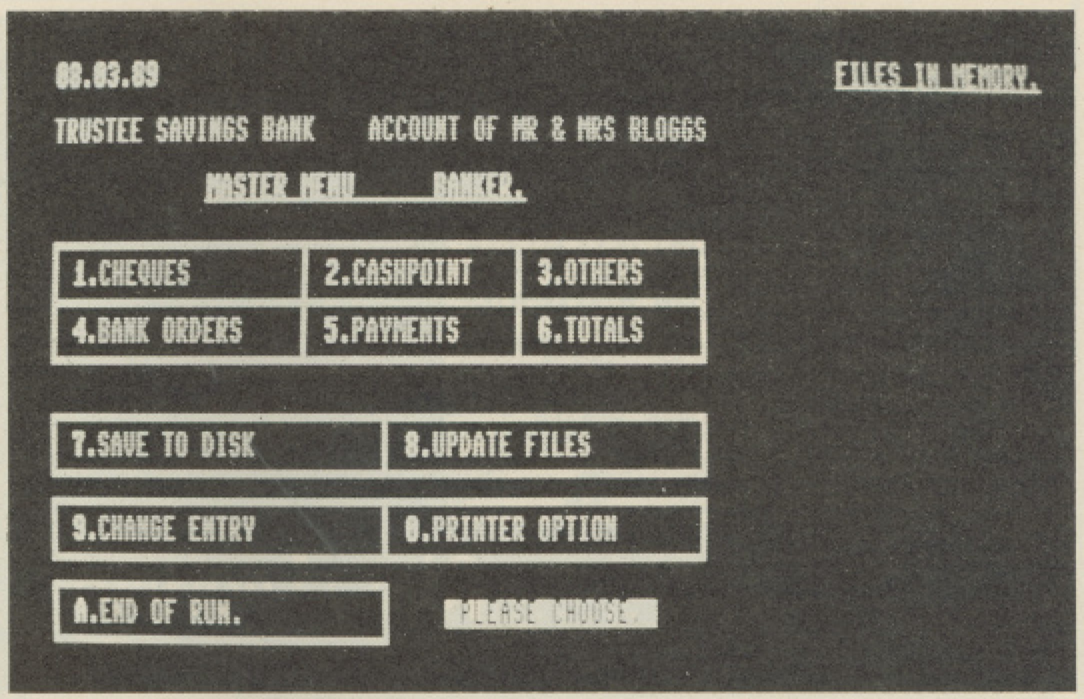
OPTION 5: On entering this field, you'll see the usual menu of MAKE AN ENTRY/VIEW ENTRIES, and it works in the same way as CHEQUES. On entering the MAKE AN ENTRY mode, you'll see that pay is entered in for you automatically, as the payments mode is designed to take any income to your account, if pay is not the required item, simply type over it with your item (as we did with "cheque book" in the Others mode).

On viewing your entries, you will see that the first entry shown is "BALANCE", and that it will be valued at 00.00. Don't worry about this at the moment, as we will deal with this at a later stage. You will also note that in this field, the total expenditure, total income, and balance is revealed, these figures being the accumulation of the whole account (cheques, cashpoint, standing orders, etc).

Please remember that for the total expenditure (and therefore balance) to work correctly, the computer has to calculate the standing orders. Therefore for a true reading, you must enter the VIEW BANK ORDERS field before using option 5.

OPTION 6: This option simply shows the TOTAL EXPENDITURE, TOTAL INCOME, and BALANCE, as did the view mode of PAYMENTS TO THE BANK (option 5). The difference with this option is it also shows the breakdown of each sub-section (cheques, cashpoint, etc), as to how it reached the figure shown at TOTAL EXPENDITURE.

Please note that as with option 5, for the total expenditure (and therefore balance) to work correctly, the computer has to calculate the standing orders. Therefore for a true reading you must enter the VIEW BANK ORDERS field before using this option.



Saving Your Files

We have now completed all the sections of the top six, and we can now continue to the other five sections of the Master Menu.

OPTION 7: This option saves your completed file to disk; using the filename that was appointed for it in your P.I.N. file (It's also the filename that you confirmed in the opening questions to the Master Menu – see page 3).

Before saving your file – because of the way your disk drive handles the information – each section (cheques, cashpoint etc) has to have at least one entry. The computer will check this automatically, and if any section has been left empty, it will enter a 'NIL' and a value of 00.00.

Because of its composition, the 'Bank Orders' section must be viewed to calculate the automatic entries. Should you attempt to SAVE your file before viewing 'Bank Orders', you'll be returned to the Master Menu. On returning, view the Bank Orders (option 4,2), and then return (option 7) to SAVING.

If in doubt, view the Bankers Orders before any option above 4 on the Master Menu.

Updating Your Files

This is a powerful command, used for updating your files after receipt of a bank statement from the bank holding the account that you are working on.

Option 8: This section works by enabling you to delete cheques and other payments that appear on the bank's statement. By showing you each section at a time, you are able to delete items that are shown on the bank's statement, therefore leaving only the items not yet cleared by the bank. The end product is an up-to-date account, without hundreds of items not needed because they've already been cleared by the bank.

On entering this option, you will first be asked for the balance from the bottom of your 'issued' bank statement.

This figure is the balance at the bottom of the statement informing you how much is left in (or owed on) your account. On entering this figure it will be placed in the BALANCE column in the view mode of 'PAYMENTS TO THE BANK' (option 5,2 of the master menu). This is the figure which showed 00.00 when we viewed the section earlier.

On entering the figure for the BALANCE, you will be taken automatically into the 'delete cheques' mode. You will notice that down the side of your entries is the numbering, from entry 1 to whatever amount of entries you have in your file.

To check the bank's statement, simply tap in the number which corresponds with the first cheque shown on the bank's statement and hit [RETURN]. You will note that the entry is now completely obscured by asterisks (*****).

Continue on this way, until all the cheques shown the statement are blanked out in the same way. Now tap in [*] [RETURN] and the computer will delete all the cheques marked with the *******.

Deleting the remainder of your files (Cashpoint, Others, Bank orders, and Payments), is done in exactly the same way as you did in the DELETE CHEQUES mode

On completion of the final section of the 'Upating Files' mode, you'll automatically be taken into the view mode of BANK ORDERS. Exit this mode as usual.

After using the Update Files option, the program is used exactly the same way as before, and each section can be viewed or the file saved.

Please remember that if you save the file after updating, it will be saved 'updated' and the previous file with all the extra items (that we do not need anymore) will then be deleted from your disk.

Changing Entries

Option 9 of the Master Menu enables you to change an entry if you make a mistake. If, for example, you incorrectly type in a cheque number in the ENTRY mode of CHEQUES. You simply continue through the page until you can exit (see page 4), return to the Master Menu, and then select option 9, where you can alter the cheque number to the correct number and then return to the Cheques mode to continue with the next entry.

OPTION 9: On choosing this option, you will see the CHANGE ENTRY MENU, categories to change: CHEQUES, CASHPOINT, OTHERS, and PAYMENTS. You will notice that the other section, BANKERS ORDERS, is not present – this is because all entries to this section are automatic, and therefore there should be no mistakes.

Should you wish to delete an entry in any of these categories, (including Bankers Orders), you should use option 8 – updating files. CHANGE ENTRIES is for changing, not deleting.

To change an entry made in the Cheques mode, you would use option 1 of the CHANGE ENTRY menu. Press the key [1] now. You will now be faced with the Cheques change mode menu. You'll see the words "ENTRY NO. 1", underneath which will be displayed your first entry from the CHEQUES mode, if you wish to change this entry press [C], if not, you can scroll through the entries by pressing [.], to scroll forward, and [,] to scroll back.

Once you've chosen the entry you wish to change, and have pressed the [C] key to change, you'll be asked to input each detail again (date, cheque number, etc). If, for example, the fault was in the 'cheque number', simply press [RETURN] to the other questions and they will remain unchanged. After changing the incorrect item, the display above will change to show the amended version. You're now free to scroll through for any other mistakes, or to return to the Master Menu (this is done by pressing the [R] key).

To change CASHPOINT, OTHERS, AND PAYMENTS entries, you choose the relevant number in the Change Entry menu, (see above), and follow the exact same procedure as for Cheques (see above).

Printer Option

The printer option is the most important part of the Banker programme, the part that actually prints out bank (style) statements of your account. The benefit of this is that your statements will always be more up-to-date than the bank's. If, for example, you cash a cheque on the 2nd of January, and you receive a bank statement from your bank on the 3rd, the cheque will not be shown, therefore luring you into thinking you have more money than you actually have! This is obviously not a good thing, as it leads to all sorts of problems...

... "Now", you say, "but I keep a running balance in the stub of my cheque book". "Yes, but do you account for standing orders, bankers charges, costs of, for example, a new cheque book that you ordered on the 22nd, and it slipped your mind?"

Of course, another way of checking is to load up your Banker program and view through the various sections, finishing with section 6 (totals). Well, of course this is by far the safest way of doing things, but now thanks to option 0 – the printer option – all you have to do is check your own, up-to-date bank statement.

Your bank statement is split up into the different categories, as is the programme, for easy viewing (see attached demonstration statement). The computer will automatically print the date, bank name, and your account title, at the top of the statement. It will then print the date, item, cheque number, debit, and credit, for each section in turn, concluding with the total expenditure, income, and balance, of your account to date.

To use this option press [0] in the Master Menu and you'll be asked to confirm that you want a printout (statement) – this is in case you had pressed the [0] by accident. Answer Y for yes, and you will be asked to ensure the printer is turned on. Check that the printer is on, and there is paper in it, and then hit any key. Your 'STATEMENT' will now be printed. On completion of printing, you'll be returned to the Master Menu.

End Of Run

To end the program, use option 'A' on the Master Menu). On pressing [A], you will be faced with a few 'safe-check' questions, the first of which is checking that you didn't press 'A' accidentally, and therefore giving you the chance to return to the Master Menu as if nothing had happened. The remainder of these questions check that you have saved the file (option 7), and whether you wish to calculate another account (if you select this, you will be returned to the LOADER TITLE SCREEN awaiting your P.I.N. Code). If you reply to this question that you do not wish to calculate another account, the computer will reset itself. Your computer is now ready to run any other program you wish to use.

Conclusion

We have now worked through each section of the Master Menu, and by this stage you should be fairly conversant with the system. You should have entered all items from your account, you should have viewed them, you might have (for demonstration purposes or otherwise) altered them, you might even have deleted some of them, you should have saved them as a file, and if you own a printer you will most probably have printed them out into a statement... Now it's time to reload your file and update (or add to) it.

We can, at this stage, either completely reset the computer and reload Banker, or simply, using option 'A' ask to view another account. Either way we will now end up with the Loader Title Screen in front of us.

Because we've already formed a P.I.N. Code, we don't have to enter a lot of boring details about accounts and standing orders, we simply enter our P.I.N. Code and the computer will load it all in a matter of seconds. Please note that if you enter the P.I.N. Code incorrectly, the computer will reply with a 'FILE NOT FOUND' message, and you'll be returned to the Loader Title Screen.

On successfully loading the P.I.N. file, you'll enter once again the questions page that precedes the Master Menu. Again all the answers are already placed in for you, and all that remains, is for you to hit [RETURN]. The only difference this time is that you must answer 'No' to the question, "ARE YOU OPENING THE FILE FOR THE FIRST TIME?". Also, for the sake of demonstration, it might be a good idea to add a month or two in the Date Field, just to watch the Bankers Orders field doing its stuff!

Because you entered "NO" to the "ARE YOU OPENING THE FILE FOR THE FIRST TIME" question, you will note that on entering the Master Menu, there is a line between the sections flashing, reading;- ********** PLEASE WAIT LOADING FILES **********". This is because the computer is loading the 'old' file that you have just saved. Once this file has been loaded, the PLEASE WAIT LOADING FILES line will go, and you will see a line in the top right-hand corner flashing; – "FILES IN MEMORY". You will of course have seen this before, as this line comes into effect as soon as any entry is made into any of the sections.

You are now ready to add to, delete, change or printout any of the files. Remember to re-save the file, before 'END OF RUNNING' once you've started to use the programme for your account.

Multi-Coloured List

Brighten up your Basic Listings by adding some colour with this handy routine

By Neil Higgins

Did you know that it's possible to have your Basic program listing in different colours? For example, you could have half of your program listed in blue, and the other in white. But the main use I find is that you can highlight certain parts of your program such as subroutines, rem statements, messages, or even the last part of the program you were working on!

The routine given will allow you to do this with ease. It works by inserting a REM statement at any line you choose which holds a string of characters that actually changes the colour of your listing. To use the routine, first type it in, save it out for future use, and then to add colour the syntax is:-

SYS 53076, LINE NO, COLOUR (0-15)

where LINE NO can be any valid basic line number, and COLOUR is any of the standard colour codes from 0-15. If the line number chosen already exists in your program, then the following message will appear – LINE EXISTS.CONTINUE Y/N. If you press the Y key, then the line will be replaced by a REM statement and your colour. If you press the N key, then the old line will be left intact – this is a safeguard so that you don't delete important lines by mistake.

As a final tip for people who don't understand the benefit of this program, let's say you have a subroutine starting at line 1000 and ending at line 2000. If you want to make this list in just the colour white, then you would first enter – SYS 53076,999,1, in which case your listing would carry on in the colour white. But we only want the subroutine to list in white, and the way around this is to include another REM to change the colour back to normal. Let's say for simplicity this happened to be light blue. You would enter – SYS 53076,2001,14, which will return the colour after the subroutine back to light blue, which was our original colour. If you experiment with different colours, you'll soon find the best ones that stand out.

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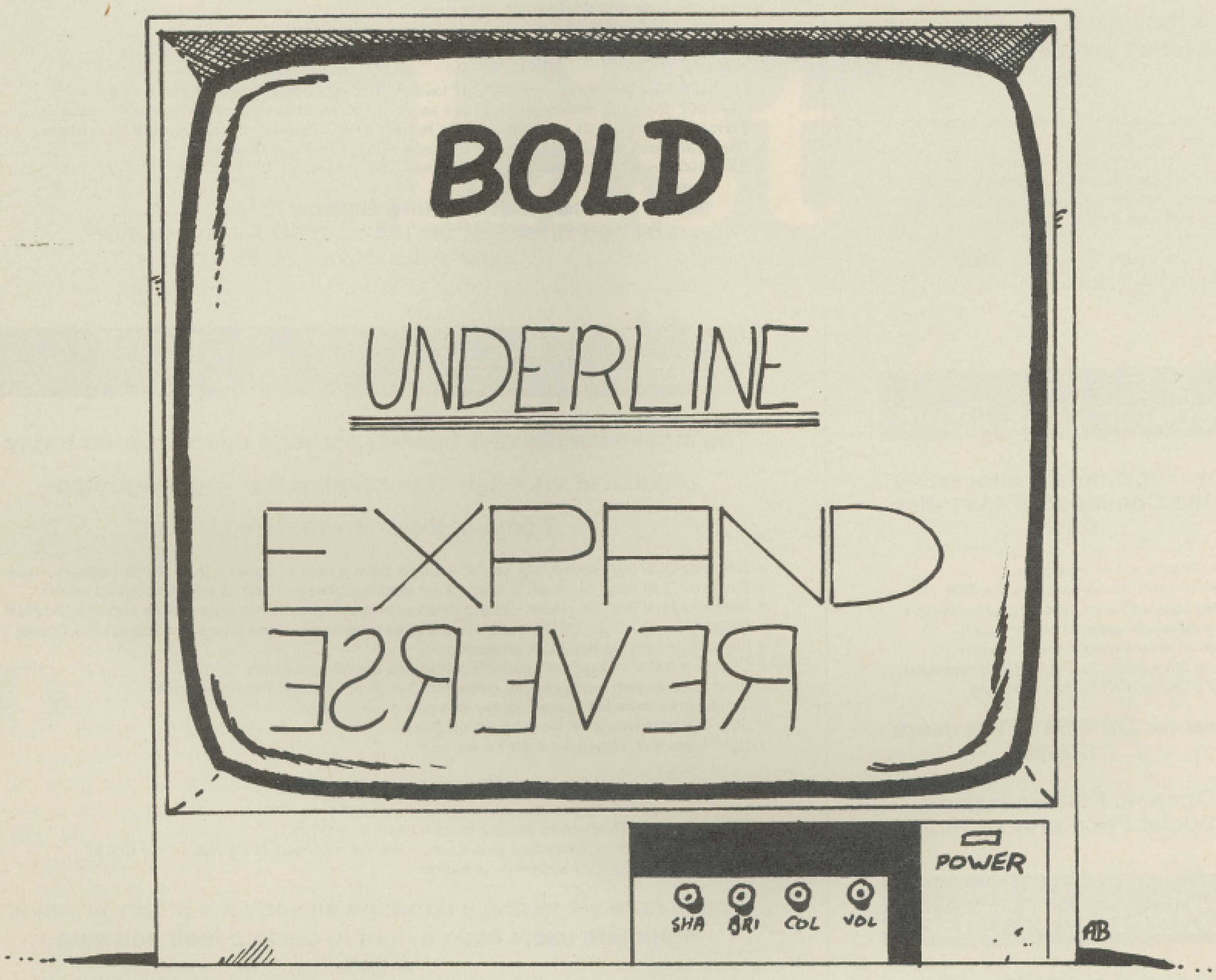
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PRINTFX



This print effects package could bring your Commodore screen to life!

By Mark Everingham

Are your Plus/4 screens boring you to death? Don't you wish you could inject some life and interest into your screen displays, something more than turning them some stomach-turning green colour in an attempt to catch the user's attention? Well, PRINTFX can save you from the oblivion of computer boredom. Simply use the mystic SYS command, and PRINTFX will change your Commodore-using life!

So, after all these extravagant claims that PRINTFX will change your life, what exactly does it do? Well essentially, it offers the Plus/4 user a variety of printing effects (or FX). These can be used to liven-up your boring screen displays, or for more serious applications, for instance in mimicking the output of a dot-matrix printer for word-processing purposes. Printing effects implemented range from simple underlining to bold, italicised, underlined, vertically & horizontally flipped, double width, double height text rotated through 270 degrees about the text origin, and displayed using an exclusive-or method. If you're struggling for breath after that sentence, or wondering what on earth it meant, don't worry – PRINTFX adds 20 new commands to BASIC which make it simplicity itself to operate.

Using PRINTFX Commands

As I have just mentioned, PRINTFX is operated through a new set of 20 BASIC commands forming an extension to normal CBM BASIC. These commands work in exactly the same way as the normal BASIC commands and are fully supported with error messages and function evaluation. For example, the command TEXT prints some text on the screen and has the syntax shown below:-

```
TEXT xcoor,ycoor,"text to be printed"
```

Usually you would use something like the command that follows to display some text:

```
TEXT 18,10,"HELLO"
```

If, however, you want to print some text at a position defined by variables, or want to allow the user to specify the text to be printed, this is no problem. For example:

```
XC=18:YC=12:TEXT XC,YC,
"HELLO"
```

This will print "HELLO" at the position (18,12) specified by the variables XC and YC. You could also use an expression such as that below to achieve the same effect.

```
TEXT 3*6, 3*4, "HELLO"
```

So any numeric argument can be replaced with any expression which yields a numeric result. The same can be applied to strings:

```
INPUT "WHAT IS YOUR NAME";
N$
TEXT 20-(LEN(N$)+6)/2,12,
"HELLO " + N$
```

As you can see, each argument may be replaced with an expression or series of calculations which produce either a numeric or string argument, whichever is required. In this way it is possible to achieve some complex effects.

PRINTFX Error Messages

Listed below are the error messages that PRINTFX gives, and their relevant meanings.

?SYNTAX ERROR – You have omitted one of the required arguments or used a phrase which PRINTFX and BASIC does not recognize in the context.

?ILLEGAL QUANTITY ERROR – One of the arguments you have used is outside the valid range for that argument. The appropriate range for each argument is shown in brackets in the next section.

?TYPE MISMATCH ERROR – You have replaced a numeric argument with a string argument, or vice-versa.

The PRINTFX Commands

What follows is a list of all the PRINTFX commands, along with the syntax they take, the actions they perform and an example of the command's use.

TEXT xcoor (0-39), ycoor (0-24), "text"

The TEXT command is used to perform the actual process of printing some text on the screen, subject to the special effects previously set up. Note that if you are using double-width text then the x-coordinate (xcoor) should be in the range 0-38, and if using double-height text, the y-coordinate (ycoor) should be in the range 0-23.

The text string can be of any length, and the TEXT command will automatically wrap the text around the screen in the direction dictated by the MOVING command.

BOLD ON/OFF

The BOLD command is the first of the special effects commands and is used to switch on or off Bold printing. The Bold typeface, which is sometimes called "Emphasized" on Dot-matrix printers, can be used for sub-headings or to emphasize in-text headings. It essentially widens every vertical line within each character printed. Like the other Effect commands, the BOLD command takes only one argument – ON or OFF to turn the effect On or Off respectively.
Example: BOLD ON:TEXT 1,16,12, "BOLD TEXT":BOLD OFF

ITALIC ON/OFF

The ITALIC command is used to switch on or off the Italic typestyle. This is usually used for placing emphasis on single words within the main body of text. Alternatively it may be used to highlight whole paragraph quotes, or to indicate that a phrase is of Latin origin. The typestyle is achieved by shifting the top half of each character one pixel to the right. The operation of the command is identical to the BOLD command.
Example: ITALIC ON:TEXT 1,10,12, "DULCE ET DECORUM EST": ITALIC OFF

UNDERLINE ON/OFF

The UNDERLINE command is used to select whether subsequent printing will be underlined or not. Underlining is used for headings, or as an alternative to italics for emphasis. The effect is achieved by simply adding a straight line to the base of each character.

Example: UNDERLINE ON:TEXT 1,13,12, "UNDERLINED TEXT": UNDERLINE OFF

REVERSE ON/OFF

The REVERSE command produces a similar effect to the RVS ON/OFF control codes on the text screen in Commodore Basic. The style inverts each pixel of each character, producing a white on black effect if in monochrome.
Example: REVERSE ON:TEXT 1,14,12, "REVERSED TEXT":REVERSE OFF

VTFLIP ON/OFF
The VTFLIP command offers the facility of Vertically flipping a piece of text so that the top of the character appears at the bottom, effectively turning it upside down. This can be useful if making a piece of text follow a shape on the screen.
Example: VTFLIP ON:TEXT 1,12,12, "UPSIDE-DOWN TEXT":VTFLIP OFF

HZFLIP ON/OFF

The HZFLIP command allows horizontally flipped text to be produced. This is similar to Vertical Flipping, except that it produces text which faces left rather than right, each pixel on the right being transferred to the left and vice-versa. The effect can be used when printing text from right to left as directed by the MOVING command.
Example: HZFLIP ON:TEXT 13,12, "BACKWARDS TEXT":HZFLIP OFF

TURN stage (0-3)

The TURN command is the first of the special effects commands which does not take a single ON/OFF argument, but instead a numeric argument in the range 0-3. The command is used to turn or rotate a piece of text through an angle specified by the stage argument. The text is rotated about the centre of each character. The stage number 0-3 produces the following rotation:-

Stage (0-3)	Rotation in Degrees (0-360)
0	000
1	090
2	180
3	270

Example: TURN 1:TEXT 9,12, "TEXT ROTATED 90 DEGREES": TURN 0

WIDTH 0/1

The WIDTH command is my own personal favourite – it allows text to be printed twice the normal width with 20 characters per line. Even though only 20 characters fit on a line, these can start at any position 0-38. PRINTFX will take care of moving the cursor two characters instead of one, and will wrap text across lines correctly.
Example: WIDTH 1:TEXT 3,12, "DOUBLE-WIDTH TEXT": WIDTH 0

HEIGHT 0/1

The HEIGHT command allows you to print text twice its normal height, with 12 lines of text fitting on the screen at a time. These lines can start at any line from y=0 to y=23 and PRINTFX automatically moves the cursor two lines when wrapping text across lines.
Example: HEIGHT 1:TEXT 11, 11,"DOUBLE-HEIGHT TEXT": HEIGHT 0

Combining PRINTFX Special Effects

If you've been keeping count, you will have realised that 11 special effects have been mentioned as achievable using PRINTFX. However, the real beauty of PRINTFX is the ability to mix different special effects. In this way, it's possible to obtain more than 4000 effects by the combination of the 11 basic styles of printing. Every single one of PRINTFX's effects can be used together, even the double-width and double-height commands. An example of this is given below:

Example:
WIDTH 1:HEIGHT 1:ITALIC ON:BOLD ON
TEXT 1,1, "DOUBLE-WIDTH, DOUBLE-HEIGHT, ITALICISED, BOLD TEXT!"
WIDTH 0:HEIGHT 0:ITALIC OFF:BOLD OFF

In fact, many more than 4000 effects are available...

ORDER "BIUVHTR"

It may not be very obvious, but the order in which PRINTFX carries out its special effects does in fact change the way a piece of text appears. The ORDER command can be used to change the order in which the special effects are carried out, although double-width and double-height is always performed last. The syntax of the ORDER command is a single string which must be seven characters in length, with each character representing a special effect. The default order is shown above, and the characters in the order string are as follows:-

Character	Special Effect
B	Bold
I	Italic
U	Underline
V	Vertical Flip
H	Horizontal Flip
T	Turn (Rotation)
R	Reverse

An example of the difference the ORDER command makes is shown below.

1. ORDER "BIUVHTR":BOLD ON:REVERSE ON
   TEXT 1,1,"BOLD & REVERSED (ORDER 1)"
   BOLD OFF:REVERSE OFF

2. ORDER "RBIUVHT":BOLD ON:REVERSE ON
   TEXT 1,1,"BOLD & REVERSED (ORDER 2)"
   BOLD OFF: REVERSE OFF:ORDER "BIUVHTR"

Using the ORDER command, it is theoretically possible to produce literally thousands more different printing effects!

MODE STORE/PLOT/ERASE/INVERT

If you've used the Commodore BASIC CHAR command in the graphics mode, you will know that whenever it prints any text on the screen, everything under the text is erased completely. Most of the time this is fine, but sometimes you may want to lay some text over graphics or erase an area of graphics with some text to

produce a rubbing-out effect. PRINTFX can print its text in four ways, and the MODE command is used to select which method is used. The four arguments and corresponding effects are listed below.

Syntax	Effect
MODE STORE	Erase everything under text before printing.
PLOT	Lay the text on top of the graphics below.
ERASE	Reset each pixel that the text consists of, rubbing out the graphics only where the text occurs.
INVERT	Invert each pixel on the screen where the text is printed i.e. set pixels become reset and vice-versa.

```
Example: CHAR 1,0,0,"??????????"
         MODE PLOT
         TEXT 0,0 "THIS TEXT IS
OVERLAID USING 'PLOT'"
         MODE STORE
```

As another interesting aspect of the INVERT mode, any text printed with the mode set to INVERT can be erased by reprinting the text in the same position with the mode still set to INVERT. This effect is often used in arcade games to produce rapid smooth movement.

EFFECT effect (0-255)

If you're using many special effects at one time, you may be wondering if there is a quicker method of setting up a special effect than using a string of BOLD, ITALIC, UNDERLINE etc.. commands, although these are very easy to use. If you've become familiar enough with PRINTFX, you can set up any effect except TURN using one EFFECT command. The EFFECT command turns a number in the range 0-255 into the combination of effects this number represents. The number is built-up from eight component numbers:-

Number	Effect
128	Bold
64	Italic
32	Underline
16	Reverse
8	Vertical Flip
4	Horizontal Flip
2	Double-Width
1	Double-Height

If you want an effect to be switched on, then you add the number to your accumulating total, or if not then leave it as a zero. For instance, if you wanted to set up Bold, Italicised, Reversed text, the numbers you would use are:-

128 (Bold) + 64 (Italic) + 16 (Reverse) = 208

Therefore, the command to set this effect into operation would be EFFECT 208. This short command replaces the marginally longer BOLD ON:ITALIC ON:REVERSE ON! However, it is obviously not as easy to understand, and so the value of the individual effect commands should not be underestimated.

Another interesting use of the EFFECT command is to produce a number of effects from a single FOR..NEXT loop. A program to show 256 of PRINTFX's special effects follows:-

```
10 FOR E=0 TO 256
20 EFFECT E
30 TEXT 1,1,"EFFECT" + STR$(E)
40 GETKEY K$
50 NEXT E
```

UPPERCASE & LOWERCASE

All the examples we've discussed so far have used the standard Commodore upper-case font, which is in operation when you first use your Plus/4. This font gives upper-case characters and shifted graphics characters such as the Spade, Heart, Diamond and Club. There may be times when you want to use the lower-case character set instead, which offers both lower and upper-case characters and so is more suitable for serious applications. This is no problem – the LOWERCASE command allows you to do this. If you then want to use the upper-case character set, just type UPPERCASE.

Example:

LOWERCASE:TEXT 1,1,"Some Text Using UPPER and lower-case"
UPPERCASE:TEXT 1,3, "Some Graphics: S -A S -S S -Z S -X"
(S -? indicates the shifted character on key ?)

RAMFONT $AAAA/AAAA & CBMFONT

In addition to using the standard Commodore fonts which are located in the ROM of your Plus/4, you may at some time prefer to use a character-set which you've created using a Character-Designer such as that found on the *Your Commodore* YD16B, C16 Special Program Disk.

Usually, you can only print such home-made characters in one style, but using PRINTFX all of the thousands of styles can be applied to your own character-set, so you can even italicise those little yellow Pacman characters you have designed! To tell PRINTFX that you wish to use a font based in RAM rather than the standard Commodore ROM font, the RAMFONT command is used. It takes as its syntax the address where the character-set is found. This address may be expressed either in hexadecimal, preceded by a "$" character, or in decimal.

For example, if you've designed a font positioned in memory at $3F00 Hex, you can choose to use it with the command RAMFONT $3F00. Alternatively, if you have a character-set in memory at the address $C000, you could select it with either RAMFONT $C000(Hex) or RAMFONT 49152(Decimal). Once you've finished using a character-set designed by yourself, you can go back to using the standard Commodore font by executing the CBMFONT command.

MOVING MLEFT/MRIGHT/ MUP/MDOWN

It may have occurred to you when using the TURN, HZFLIP and VTFLIP commands that it's sometimes a bit limiting to have text always printed from left to right in the conventional manner. If your text is facing towards the left, then it makes more sense to print text from right to left, or if the text is facing upwards, from bottom to top.

You can choose which way text is to be printed using the MOVING command, followed by the direction in which text should be printed. The direction should be one of LEFT, RIGHT, UP and DOWN, and each should be directly preceded with an "M" for "Moving". This "M" is needed to avoid clashes with the LEFT$ and RIGHT$ functions of CBM BASIC. Whichever direction PRINTFX is

printing in, it automatically takes care of the wrapping of text from line to line, and if a TEXT command causes text to run off the screen, it simply stops printing text on the last visible character.
Example: MOVING LEFT:TEXT 38,1, "PRINTING RIGHT TO LEFT!": MOVING RIGHT

STANDARD

If you're using a large number of special effects at one time, when you come to turn them off again, this can result in a large number of BOLD OFF, ITALIC OFF, UNDERLINE OFF etc. Commands which are a bit of a waste of time when you want everything switched off. One solution is to use an EFFECT 0 command, but this doesn't reset the TURN function or Font address. The answer is the STANDARD command which simply resets all PRINTFX's functions to their standard default values. These settings are as follows:-

Effect	Standard Setting
Bold	Off
Italic	Off
Underline	Off
Reverse	Off
Vertical Flip	Off
Horizontal Flip	Off
Turn (Rotation)	0
Width	0
Height	0
Order	"BIUVHTR"
Font	CBMFONT Uppercase

Example: EFFECT 255:TEXT 1,1, "PRINT FX": STANDARD: TEXT 1,4, "STANDARD"

The FXHELP Command

When you're first using PRINTFX, or later when using the more advanced feature, you may not be able to remember the exact name of some of PRINTFX's 20 commands. In such a case, the solution is elementary, just type FXHELP. The FXHELP command gives you a list of the PRINTFX commands, as well as the tokenised arguments they can take such as OFF, STORE or MLEFT. This command should be of great help when getting to know PRINTFX.

USING COLOUR WITH PRINTFX TEXT

That concludes our summary of the PRINTFX commands. The next subject I would like to discuss is the use of colour when printing text using PRINTFX. This is simple to do, and the process is shown below. Text printed by PRINTFX is printed in the current foreground colour on the current background colour. These are set-up using the standard CBM BASIC COLOR command.
Example: Printing some text a medium red colour on a bright yellow background.

COLOR 0,8,6
(Set up Background colour)

COLOR 1,3,4
(Set up Foreground colour)

TEXT 1,1, "THIS TEXT IS RED ON YELLOW"

Any one of the Plus/4's 121 colours may be used for both background and foreground colours.

Abbreviating PRINTFX Commands & Keywords

In the same way that you can lessen the amount of typing needed to enter a BASIC command in standard Commodore BASIC by using abbreviations, you can abbreviate all the PRINTFX commands and keywords such as STORE or OFF. The full and abbreviated forms of all PRINTFX words are shown below.

Getting PRINTFX "Up & Running"

The PRINTFX system is easy to install, and may be used by either Tape or Disk users. The process of poking the machine-code data into memory is simply a matter of loading and running the BASIC LOADER program (Listing 1). The program will inform you of any errors in the data as follows:-

INVALID NUMBER IN LINE n –
One of the numbers in the specified line is outside the valid range of 0-255

CHECKSUM ERROR IN LINE n –
Each line of data contains a checksum and this should be the sum of the other numbers in the line. This error indicates that either one of the data items in the line is incorrect, or the checksum number itself is wrong.

Once you get the message "STORAGE COMPLETE – DATA 100% CORRECT" follow the program's instructions to save a copy of the working code onto a disk or tape. You can then load PRINTFX by typing the following:-

DLOAD "PRINTFX"
(For Disk Users)
or: LOAD "PRINTFX"
(For Tape Users)
RUN

A title message will appear at the top of the screen, and the PRINTFX commands will then be in operation. Because PRINTFX uses the high-resolution graphics screen, any print-

Full	Abbreviated	Full	Abbreviated
BOLD	B Shift-0	STANDARD	
ITALIC	I Shift-T	EFFECT	E Shift-F
UNDERLINE	U Shift-N	MOVING	MO Shift-V
REVERSE	R Shift-E	TEXT	T Shift-E
VTFLIP	V Shift-T	FXHELP	F Shift-X
HZFLIP	H Shift-Z		
TURN	T Shift-U	OFF	O Shift-F
WIDTH	W Shift-I	STORE	S Shift-T
HEIGHT	H Shift-E	PLOT	P Shift-L
UPPERCASE	U Shift-P	ERASE	E Shift-R
LOWERCASE	L Shift-O	INVERT	I Shift-N
CBMFONT	C Shift-B	MRIGHT	M Shift-R
RAMFONT	R Shift-A	MLEFT	M Shift-L
ORDER	O Shift-R	MUP	M Shift-U
MODE	M Shift-O	MDOWN	M Shift-D

ing program should take the following form:-

GRAPHIC 1,1 (to clear the screen)
or: GRAPHIC 2,1 (for a Split-Screen)
TEXT etc... (Do your PRINTFX printing)
GRAPHIC 0 (Select Text mode again)
END (Return to BASIC [Optional])

The GRAPHIC 2,1 gives a screen with graphics at the top and a small text window at the bottom. If you don't wish the screen to be cleared, omit the ",1". Some interesting effects can also be generated using the multi-colour graphics mode. To activate this, do GRAPHIC 3 or GRAPHIC 4.

C16 Owners cannot use PRINTFX because on a C16 with PRINTFX installed there is exactly 2 bytes of free memory left! However, if you possess a C16 with a minimum of 16k extra RAM expansion, you can use PRINTFX as it stands with no alteration.

The PRINTFX Screen Editor

In order to let you play around with some of PRINTFX's special effects or to generate simple screen displays with the minimum of trouble, I have included a listing for a simple Screen Editor. Using this program you can use most of PRINTFX's special effects to quickly produce professional screen-displays. The process for getting this program running is shown below.

DLOAD "PRINTFX"
(For Disk Users)
LOAD "PRINTFX"
(For Tape Users)
RUN
Type in the Screen Editor Program (Listing 2)
DSAVE "PRINTFX S.EDITOR"
(For Disk Users)
SAVE "PRINTFX S.EDITOR"
(For Tape Users)
RUN

Subsequently, you can use the Screen Editor by loading & running PRINTFX then loading and running "PRINTFX S.EDITOR".

Upon running, after the Title Screen has been displayed, you can freely type text. The key-presses below have the special actions shown

Key-press	Function
RETURN	Go to left of next line
DEL	Delete character to left of cursor
CTRL-B	Toggle Bold On/Off
CTRL-I	Toggle Italic On/Off
CTRL-U	Toggle Underline On/Off
CTRL-R	Toggle Reverse On/Off
CTRL-V	Toggle Vertical Flip On/Off
CTRL-H	Toggle Horizontal Flip On/Off
CTRL-W	Toggle Double-Width On/Off
CTRL-L	Toggle Double-Height On/Off
CTRL-N	Increase TurN angle
CTRL-C	Toggle Upper/Lower case
CTRL-D	Select Default settings
HOME	Move to top-left corner of screen
CLEAR	Clear screen and move to top-left
LEFT	Move Cursor Left
RIGHT	Move Cursor Right
UP	Move Cursor Up
DOWN	More Cursor Down
ESC	Abort Program
[F1]	Toggle Bold On/Off
[F2]	Toggle Italic On/Off
[F3]	Toggle Underline On/Off
[F4]	Toggle Reverse On/Off
[F5]	Toggle Double-Width On/Off
[F6]	Toggle Double-Height On/Off

Although the PRINTFX Screen Editor does not support colour or all of PRINTFX's functions, it's a good introduction to using PRINTFX, and because it is written in simple BASIC, it should be very easy to add whatever facilities you want to the program.

PRINTFX Control Locations

For the more advanced programmers, it may be helpful to know a few of the details about PRINTFX for compatibility or further programming. Below is a quick summary of memory usage for such purposes.

Address	Usage
$1001-$17FF	PRINTFX Program & Data Area
$D0	X-Coordinate
$D1	Y-Coordinate
$D2-$D3	Auxiliary Screen Address
$D4-$D5	Character Address Pointer
$57-$58	Temporary Storage Locations
$0B	Temporary Register Store
$02E4	Font Base Address (MSB)
$030A-$030B	BASIC Token Evaluation
$030C-$030D	BASIC User Token Generation
$030E-$030F	Keyword Creation
$0310-$0311	User Token Preparation

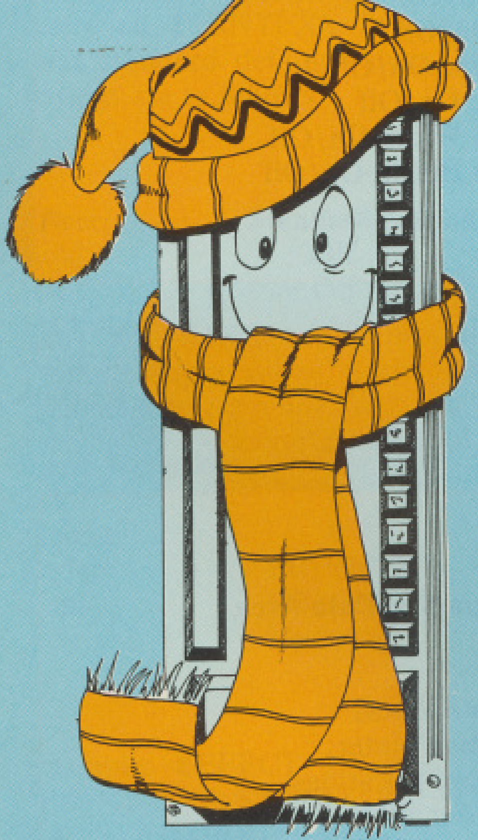
Because PRINTFX leaves the CHRGET routine and the vector $308-$309 intact, it is compatible with most other C16 & Plus/4 add-ons such as DOS 5.1.

Well, I think that about wraps it up. PRINTFX without doubt has many serious applications, but remember that above all, it should be good fun!

Anti-Freeze

Protect yourself against pirates with this ingenious new program

By Neil Higgins



In past issues of *Your Commodore*, there have been many articles on the subject of program protection – indeed, I've even written one myself. One thing they all had in common was that they only described the simple ways of protection, such as disabling the run stop key, detecting a hardware reset or even using a secret password to prevent access to a program. These methods worked well, but how can we protect ourselves against the freezer systems now used on the latest state-of-the-art back-up cartridges? Well, in this article I will explain one way in which machine code programmers can defeat such systems.

The most common cartridges for the Commodore 64 at present have to be 'Action Replay', 'The Expert', 'Final Cartridge' and 'Freeze Frame', all of which have a built-in freeze button which is supposed to be able to stop any program while it is running and make a back-up. If you have any of these, then stay tuned! I was only able to test my anti-freeze routine on two versions of these cartridges – namely the Final Cartridge 2 and Action Replay MK 3, and in both cases it proved highly successful.

Eureka!

Before I explain how to use the anti-freeze, I will tell you how I first came across it. It all started when I was sitting around one day wondering what my next project would be. After an hour spent staring blankly at my computer equipment, I noticed my 'Action Replay' cartridge, and I had a brainwave – why not try and detect whenever the freeze button had been pressed! But where on earth would I start?

I decided not to try using non-maskable interrupts or other equally precarious methods. I thought there would have to be at least one location somewhere in memory that changes whenever that button is pressed. Some obvious memory locations to test were around the CIA chips from $DC00 to $DD0F, and the stack from $0100 to $01FF, so after a length of time around the CIA s without getting anywhere, I concentrated on the stack area.

Since 'Action Replay' is supposed to have a system that leaves the stack contents intact, I decided to fill it with a random byte (I filled $0100 to $01FF with $00) and then run a routine which would set the stack pointer. After countless attempts at pressing the freezer and checking the stack, I finally set the stack pointer to 25, then again cleared the stack area and pressed the freeze button, having entered the built in monitor. I then noticed that location $0103 had changed, and thus my anti-freeze program was born.

Trying it out

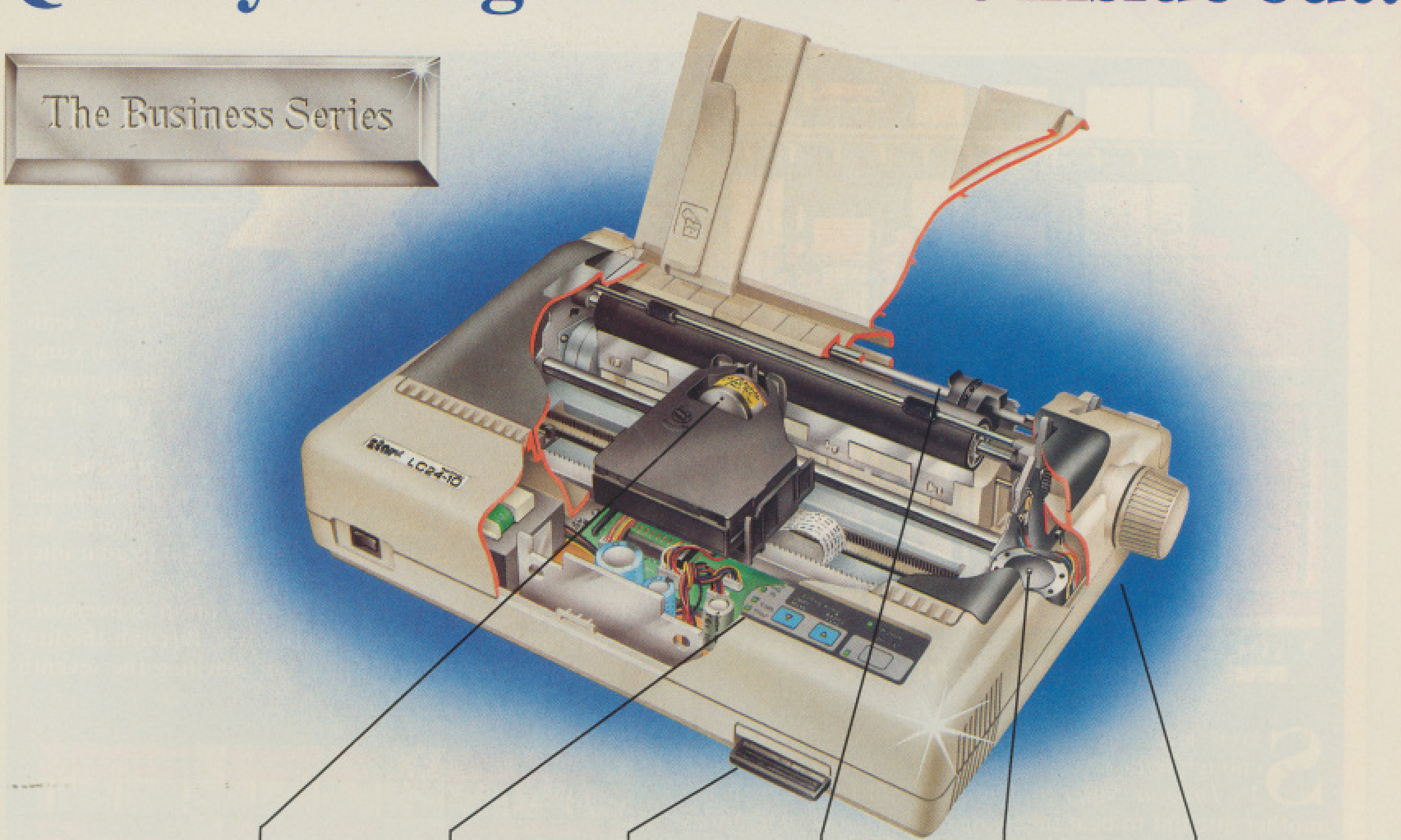
The routine is given as a source code listing which was written using the Micro Assembler, but it should be compatible with most other assemblers (you may just need to change the TXT pseudo ops to BYT). A basic loader is also given for those without assemblers. To test it on your cartridge, load it into memory and start it with SYS 49152. A message will appear asking you to press the freeze button, and after doing so you must return to it by using the 'RUN' option in your cartridge. If the test was successful, the message 'I gotcha! You have just used the freeze button ' will be displayed, at which point you can re-test to satisfy yourself that it works. If it crashes on return, then you could also call it successful, as it means a working back-up cannot be made.

Machine coders can of course add their own routines onto this, such as filling the whole of memory with random bytes, or even printing a silly message to try on your mates. If you do edit anti-freeze for your own programs, it's important to note that since the stack is reduced to 25, you are severely limited as to the number of nested subroutines or ROM routines you can call. Also, check your usage of the instruction PHA, in other words keep an eye on the stack pointer.

The routine also needs to use location $0103, but this is also used by certain rom routines – such as the one at $BDDD which converts the contents of floating point accumulator 1 to a string starting at $0100 – so if you intend to use the ROM; make sure you know what memory addresses are used, or it could be disastrous.

As there are new versions of cartridges coming onto the market every few months, I can't tell you if anti-freeze would successfully work with them. I hope you will try it out yourselves, and if anyone out there has already got all the latest ones, then why not send in the results to *Your Commodore* and demand they be put in the Mailbag for us all to see. Anyway, I hope anti-freeze helps develop your own programs to stamp out the pirates. YC

Quality. Designed from the inside out.

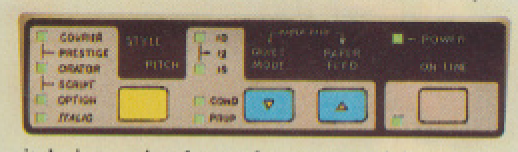


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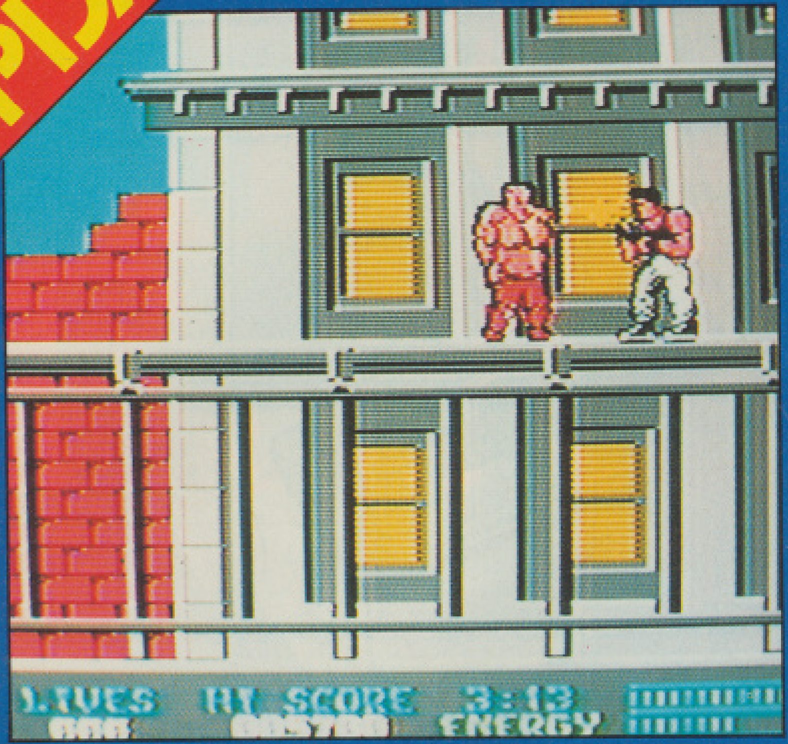
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The game has obviously been programmed by the team behind *Target Renegade*, and is a cut above the usual kung-fu games. It combines fast action with good backgrounds (such as a giant truck) which actually are part of the gameplay.

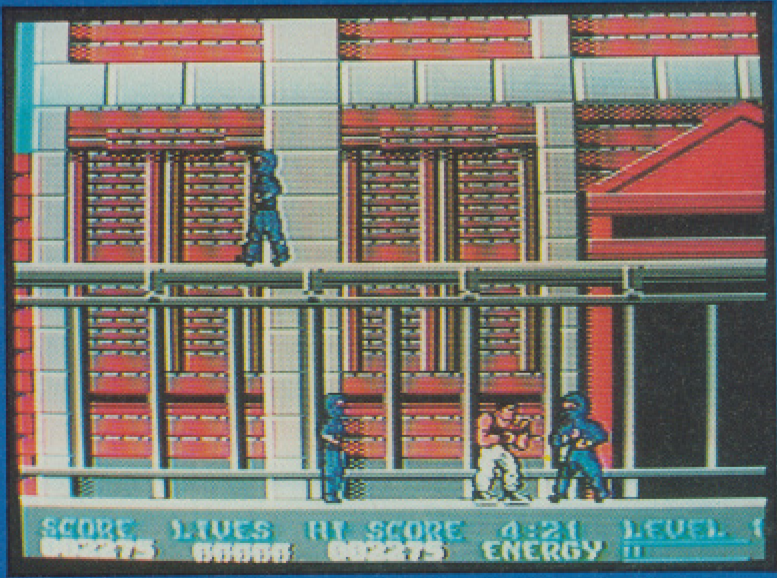
To improve your chances you can pick up and use weapons the ninjas have used against you, which increases your range but can cause you problems as it varies the usual distance between you and your opponent to guarantee a hit.

This is one of the better kung-fu coin-op conversions and you should be able to fight your way through the first two levels by your second game, but reaching the seventh may take longer.

Seven levels of kung-fu action await those strong enough to tackle *Dragon Ninja*, or rather *Bad Dudes Vs Dragon Ninja* to give it its full title. Yes, here's another attempt to beat the living daylights out of a motley collection of opponents as you attempt to save the President of the United States.

Controls are the usual, predictable walk, jump, kick and punch moves with the addition of a super punch if you press and hold the fire button for a few seconds to build up strength. However, you are unlikely to have the time to accurately move the joystick to select face kicks and back elbows as you're swamped by ninjas, high-kicking acrobatic women warriors and weapon-brandishing minions.

If you manage to dispatch them you have to run the gauntlet of the super villain positioned at the end of each level who unlike the others that are killed with a single punch has an energy bar next to yours at the bottom of the screen and takes several blows to kill. The first super villain you must cross fists with is a fire-breathing giant, a green and gruesome giant ninja who, literally, has a split personality as he can quickly become an army.



Touchline:
Title: *Dragon Ninja.* ***Supplier:*** *Imagine (Ocean), 6 Central Street, Manchester, M2 5NS.* ***Tel:*** *061--832 6633.* ***Machine:*** *C64/128.* ***Price:*** *£9.95 (cass) £14.95 (disk).*

Dragon Ninja



PaperClip Publisher

PaperClip Publisher offers professional results at a budget price.

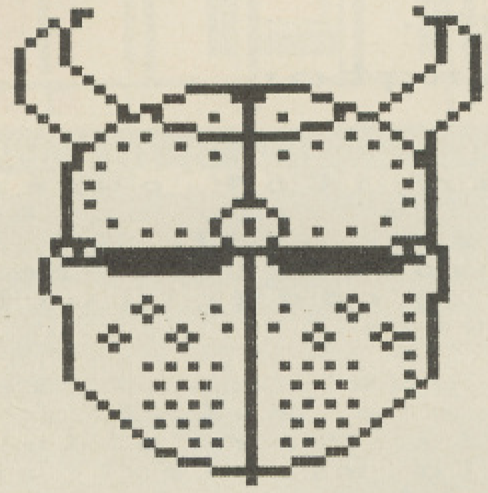
By Tony Hetherington

PaperClip Publisher is the latest in a line of top quality but imported DTP (Desk Top Publishing) packages that will allow C64 owners to create newsletters, magazine pages and even the ubiquitous flysheets from the comfort of their keyboard.
As you have probably guessed by now these pages were created using the package that boasts some pedigree as the names of three top software houses appear on its packaging. The program's author's are Batteries Included (the company that produced the *PaperClip* word processor which appeared over here via the now defunct Ariolasoft,) Gold Disk (producer of the Amiga DTP program *Professional Page*) and Electronic Arts. Unfortunately, Electronic Arts has no plans to import *PaperClip Publisher* into the UK and so, once again, C64 owners have to rely on the efforts of F.S.S.L. to provide the best in productivity software.

As you can see *PaperClip Publisher* allows you to mix text and graphics in a variety of styles that can produce some interesting results. You'll see that I've strayed from the normal *Your Commodore* style to show off some of them such as the drop shadows and shading.

This article has been written using *PaperClip*, which is only one of a handful of wordprocessors it supports, and then converted by the text converter utility before loading into the program's text editor. Once in the editor you can add formatting commands such as ensuring that everytime *Your Commodore* appears it is written in italics. The text editor can be used to write all of your

text but it lacks the advanced features (such as a spell checker) of most word processors. The program also includes a quicktext editor that can



handle up to 250 characters and is ideal for headings, introductions and picture captions.

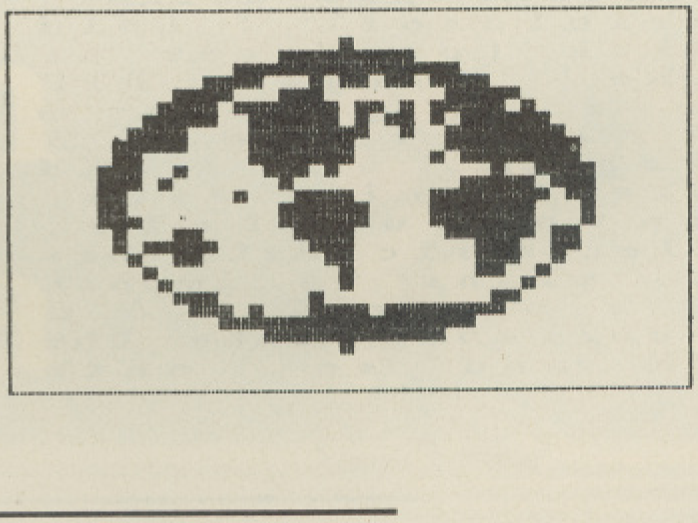
Not surprisingly there is a graphics editor which consists of a rudimentary graphics package through which you can create your own artwork and a more useful utility through which you can load in clip-art from *Print Shop*, *Newsroom*, *Print Master* and the *Doodle* graphics package. *PaperClip Publisher* includes its own clip-art library (which is used to illustrate these pages) but it's useful to be able to use the artwork from other programs.

Once you have your text and graphics together on a work disk it's time to create some pages.

Pull down menus and dialogue boxes guide you through the page creation process and it's possible to go from a blank screen to printed page in under an hour. In fact, half of the well written manual is dedicated to a step by step tutorial in which you create a sample page using predefined text files.

The first stage is to define the format for your page or pages (if you want each page can have a different format) and determine the size of margins, the number of columns on the page and the size of the paper it will be printed on. Next you split the pages into boxes into which you will pour the text and graphics.

Boxes are the working units of *PaperClip Publisher* as they contain there own local conditions

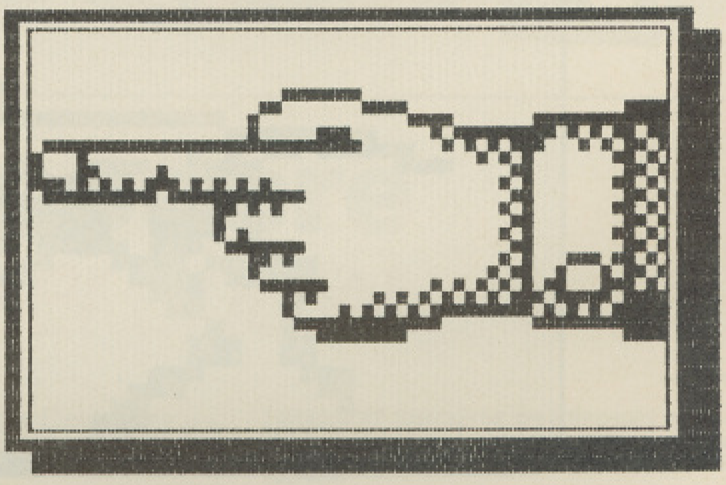


others to contain text and graphics as required. One powerful feature is the ability to link boxes, these can be either on the same page or on others, through which you can run two stories side by side on your frontpage and then continue them inside. It sounds simple but quite a few so called professional packages don't have this feature.

Once the page layout is complete you simply pour in the text and graphics by selecting the appropriate icon from a band of them on the lefthand side of the creation screen and select the file from a dialogue box. Then go and make a cup a tea as dribble would be a more appropriate description for the pace of this action. Eventually the text will be there and there's even a magnify function to check it's in the right place if you've used anything less than 24 point text.

Finally, you use the quicktext option to add headlines, which can be quite a fiddly process to get them centred in their boxes, and then print out your masterpiece.

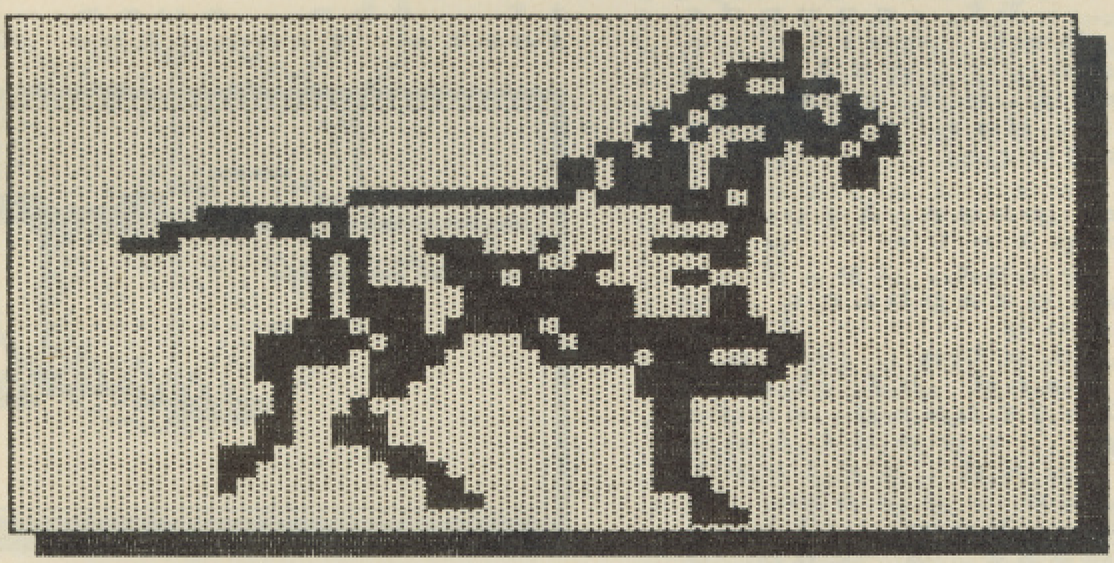
Comparisons will be made between this and *GeoPublish* so I might as well join in. I found *PaperClip Publisher* to be easier to use but limited in its access to outside word processors. *GeoPublish* can grab text from any C64 wordprocessor. Graphically, this one scores with its ability to use *Doodle* artwork and it can even use fonts from the GEOS



fontpacks. *PaperClip Publisher* is cheaper as you don't have to buy GEOS as well. On the minus side it is very slow when it's pouring text and printing out pages. On the plus side it offers more variety of fonts and point sizes than, for example, *Stop Press* (AMS) and would be the obvious choice for existing *PaperClip* users.

Touchline:
Title: *PaperClip Publisher.*
Supplier: *F.S.S.L., 18, High Street, Pershore, Worcs., WR10 1BG.* **TEL:** *0386 553153.*

that determine the size, style and appearence of their contents. If the box contains text you can use the current box dialogue box to decide whether the text will be centered or justified, printed in Helvetica, Times,



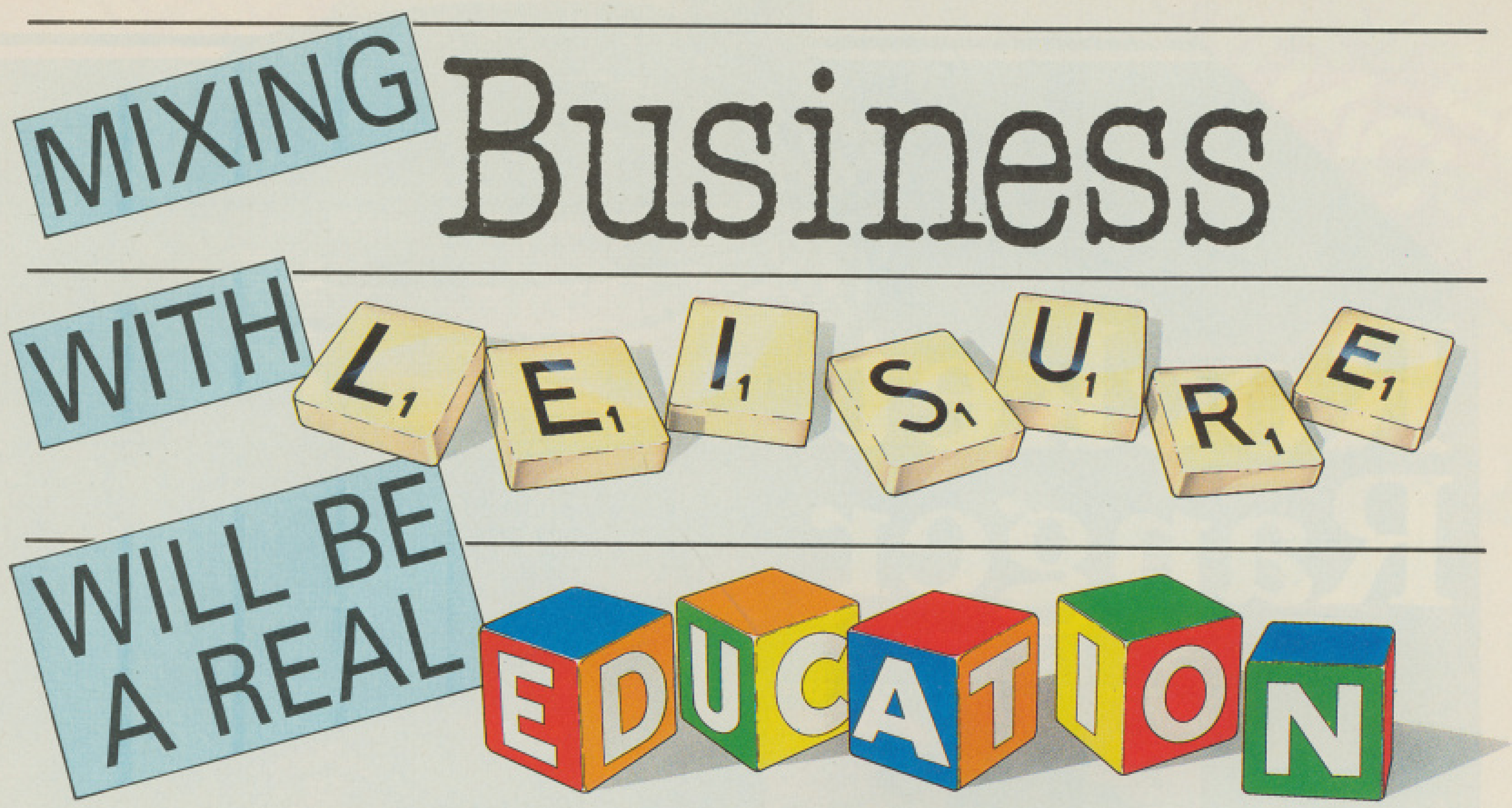
Courier or Symbol fonts, in 8, 12, 16 or 24 point size, in white or black ink, on a plain or patterned background, magnified in either the X or Y directions or both and whether the box containing it should be visable, have a thick or thin border and have a drop shadow.

If the box is to contain graphics then, although all the options remain, you only need to worry about patterns, magnification, drop shadows and vertical and horizontal margins to centre the clipart in the box.

There is also an additional option used to determine whether a box is opaque or transparent. This is used to overlay text on graphics or patterns to produce some interesting effects.

It would be tedious to have to define each and every box, particularly in a long document like this one. You can use a default box option to establish a norm and then only change the exceptions.

Use of the word *box* is misleading as a box can be a rectangle and can be of any size. Once placed a box can be moved or resized at will with a few presses of the fire button. For example, one box could be used for the newsletter's heading, another for the introduction and



Commodore computer show

Britain's brightest event for Commodore computer users is back! And there's more to see than ever before.

This show has three main themes covering some of the major uses to which Commodore machines are put. There are over 70 key companies who will be exhibiting their latest products, which means that just about everything that's new in the Commodore world will be on show!

Novotel Exhibition Complex, Hammersmith, London W6
Friday to Sunday
June 2 to 4
10am-6pm Friday & Saturday; 10am-4pm Sunday

Business

Many companies will be demonstrating their latest software and hardware, specially designed to release the full business potential of Commodore computers.

As well as products for the C64 and Amiga series, you'll be able to try out applications for the price-beating Commodore PC compatible micros.

And you'll also be able to attend seminars covering all aspects of using Commodore micros in your business.

Leisure

The C64 and Amiga computers are the most powerful 8 and 16 bit micros for producing fast-action arcade quality games. The range of new software on show will demonstrate how these machines' power is continually being stretched, producing faster and even more addictive games with superb graphics.

If you're a keen game player, you'll find there's so much on offer at the show you're guaranteed a real treat!

Education

Commodore micros are now used as educational tools all over the country. With the development of BBC Basic on the Amiga, and the advent of Desktop Video (combining TV pictures with text and graphics), the range of educational applications is endless.

At the show you'll see how the latest software packages are making real breakthroughs in the educational sector, and be able to try them out for yourself.

Special Events

As well as special events and presentations, you'll also be able to meet some of your favourite celebrities, and maybe get a chance to talk with them about how they use micros in their work.

So for a great day out, whether you want to see what the future holds for Commodore computers, to buy the latest software or to get advice on specific applications, the Commodore show is the place to go. And if you send in the coupon today, we'll knock £1 off the price of each ticket!

● ***For the first time we are offering a family ticket for just £11 allowing entry for two adults and two children – saving up to £7 off the usual entry price!***

How To Get There
By Underground: *Hammersmith (Piccadilly, Metropolitan & District).*
By Bus: *266, 714, 716, 290, 30, 72, 73, 74.*
Car parking facilities available at the Novotel.

Advanced ticket order — Commodore computer show

POST TO: ***Commodore Show Tickets, PO Box 2, Ellesmere Port, South Wirral, L65 3EA.***

Please supply:

☐ Adult tickets at £4 (save £1) .... £ ______
☐ Under 16s tickets at £2.50 (save £1) ..... £ ______
☐ Family ticket at £11 (save £7)................ £ ______
Total £ ______

☐ Cheque payable to Database Exhibitions
☐ Please debit my Access/Visa card no:

Expiry date: ____ / ____

Signed ....

Admission at door: £5 (adults), £3.50 (under 16s)

Advance ticket orders must be received by Wednesday, May 24

Name ....

Address ....

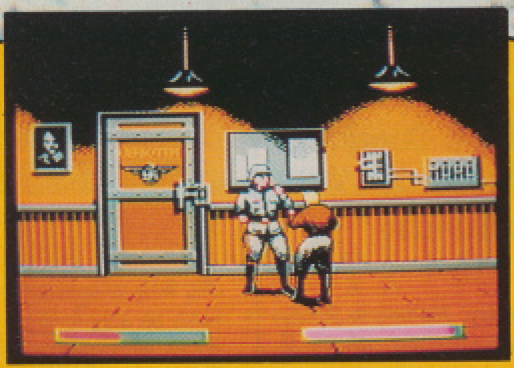
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..................................Postcode ....

PHONE ORDERS: Ring Show Hotline: 051-357 2961
PRESTEL ORDERS: KEY *89, THEN 614568383
MICROLINK/TELECOM GOLD ORDERS: 72:MAG001
Please quote credit card number and full address A692



Rocket Ranger



It's Saturday morning showtime again, as *Rocket Ranger* takes to the skies to defeat the Nazi hordes and rescue the brilliant Professor and his beautiful daughter. You've probably seen the series, you may even have read the book, so now play the game and become *Rocket Ranger*!

The game begins in your lab in Fort Dix USA in 1940 – you're working on your latest invention when suddenly a rocket pack, ray gun and decoder wheel mysteriously appear in front of you, warning that the Nazis have discovered a fuel known as Lunarium and are set not only to win the war but also to dominate the world for centuries. Immediately, you realise that the equipment has been sent from this potential evil future, and that you're the only one who can stop it coming true.

Things suddenly take a turn for the worse when a deadly Nazi Zeppelin lands and stormtroopers kidnap the brilliant professor Otto Barnstoff and his beautiful daughter Jane. You strap the rocket pack on your back and rush to the rescue. Before you get carried away this isn't a simple bash the bosche game, as it demands a combination of arcade skill and strategy.

The strategy element is controlled from the war room at Fort Dix, and involves issuing orders and receiving reports from your team of agents in occupied Europe. These agents can be ordered to either organise resistance to slow down the Nazi war machine or infiltrate Nazi command and gather information about their dastardly plans and the location of secret bases.

But what of the professor and Jane I hear you cry? Their fate will determine the effectiveness of the Nazi war machine – they plan to fly the unfortunate pair to Germany, which will raise Nazi power from 50 to 75 per cent, and then torture Jane with a mind machine until the Professor agrees to be moved to the base on the Moon, which will increase it to 90 per cent. This efficiency determines the rate of Nazi conquest, and the time you've got left to save the world.

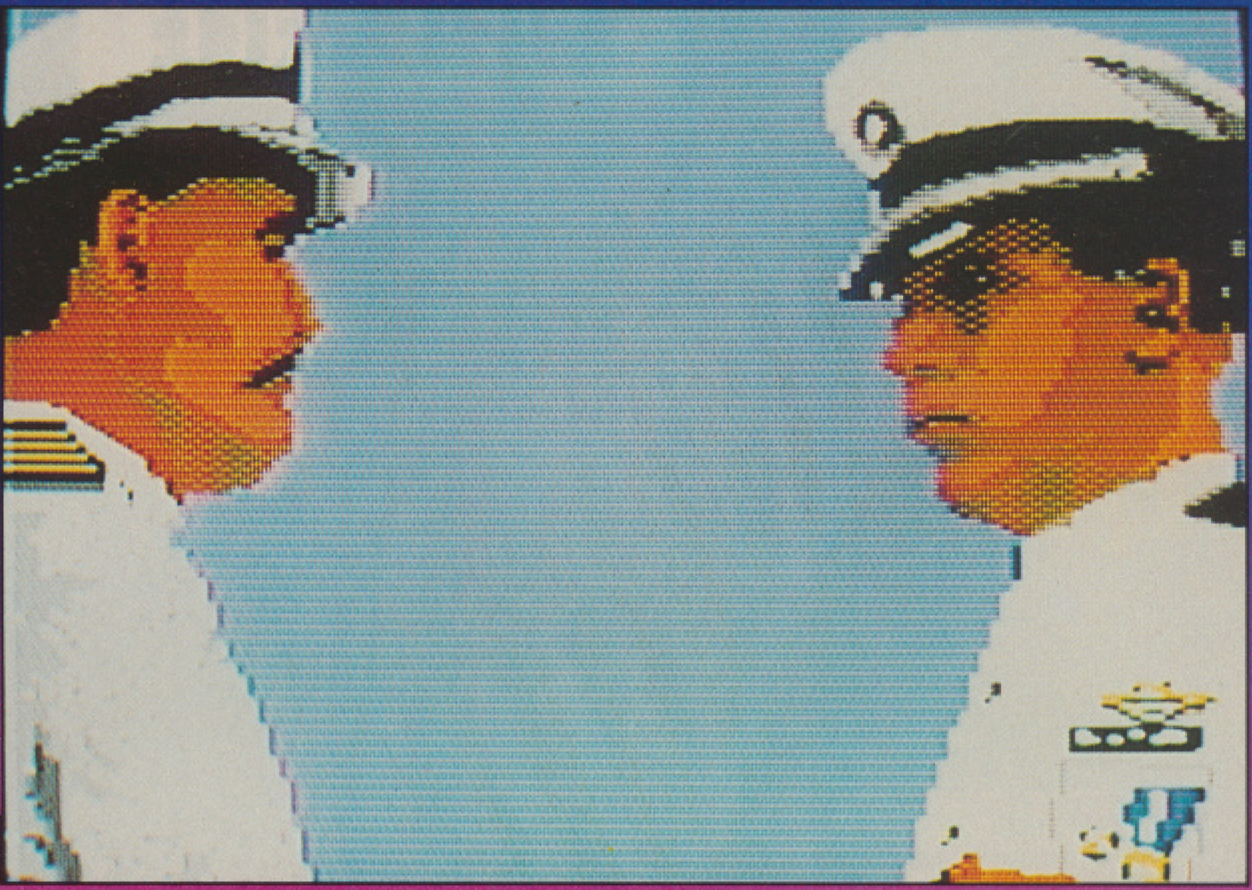
Your first task is to organise your agents to find the location of rocket labs, bases and bomb factories, and then initiate resistance to slow down the Nazi advance. While they're busy with that you can fly off in pursuit of the Professor, which will lead you into either a hijack attempt on a Zeppelin, a dogfight with a squadron of Me109's or a shoot-out with anti-aircraft (and anti-*Rocket Ranger*) guns depending on how long it took you to find them.

You then have to find and attack five Nazi rocket bases to steal parts to build your own ship (and plunder Lunarium to fuel it), before blasting off to the moon and a final battle with an army of Nazi Zombie Women.

Unfortunately, your agents can be discovered and shot, rocket pack fuel is in short supply, and Nazi guards and Me109's aren't easy to beat, so the saving of the world will be a heroic struggle. However, once you've taken to the skies a few times, you'll agree that this is best Cinemaware games yet. Forget *The Three Stooges, Defender of the Crown* and *Sinbad* – it's *Rocket Ranger* that'll save the day!

Touchline:
Title: *Rocket Ranger.* ***Supplier:*** *Cinemaware (Mirrorsoft), Headway House, 66-73 Shoe Lane, London EC4P 4AB.* ***Tel:*** *01-377 4645.*

F-14 TOMCAT



The F-14 Tomcat is the USA's main carrier-based fighter and is capable of quick take-offs, aerial acrobatics and swift, deadly attacks. It's armed with Phoenix long range missiles, Amraam mid range, sidewinder short range missiles and a Vulcan cannon, and protected by electronic counter measures, including chaff and flare launchers.

Before you decide that you've heard it all before, let me add that there is a tough training program to endure before you can even qualify for fast jets, and there are 80 missions to fly once you do qualify. Once you've enlisted, you have to complete a rigorous training schedule, but luckily the program spares you the square bashing, so you start by climbing into the cockpit of your training aircraft. Throughout the exercises an instructor flies in front of you and gives you instructions, so it's a good idea to find the pause button so you can check what you're going to do before he disappears from view.

The first exercises are simple, and involve climbing to set heights and banking to specified headings before returning to base. Then you move onto more complex combat manoeuvres such as the Low-G Yo-Yo and the Barrel Roll while still playing follow-the-leader. After the eighth move, you're assessed on your performance and "pipelined".

Only the best get to fly fast jets – the others are failures, which in most air forces means helicopters. If you should fall short of the mark, a graphics sequence shows how you continued to prove you couldn't fly and ended up as a wrestler known as Tomcat Tom. If you eventually succeed, you'll be assigned to the Carrier Nimitz and sent on patrol and work your way through the 80 missions, and hopefully through the ranks and medals, until you finally retire.



Becore each mission, you're briefed as to the patrol you are ordered to carry out, as well as the possible risks and the rules of engagement. Then it's straight into action as the bogies appear instantly on your scanner. In some missions, war has already broken out and you can shoot at will. These tend to be the easiest as only you have Phoenix long range missiles, so you can drop your speed and take out the enemy without any risk.

Unfortunately, in most scenarios you aren't allowed to fire until either your commander gives you permission (very rare) or the enemy fire at you. The result is an intriguing cat-and-mouse game, in which you try and warn the enemy off while keeping them in your sights and you out of theirs. This is where your training really pays off, as the enemy fighters (usually Migs) break and bank to try and get behind you. Only then will they fire. It's up to you to keep them in check until they fly off or risk a shot, when you can finish them off with a couple of sidewinders.

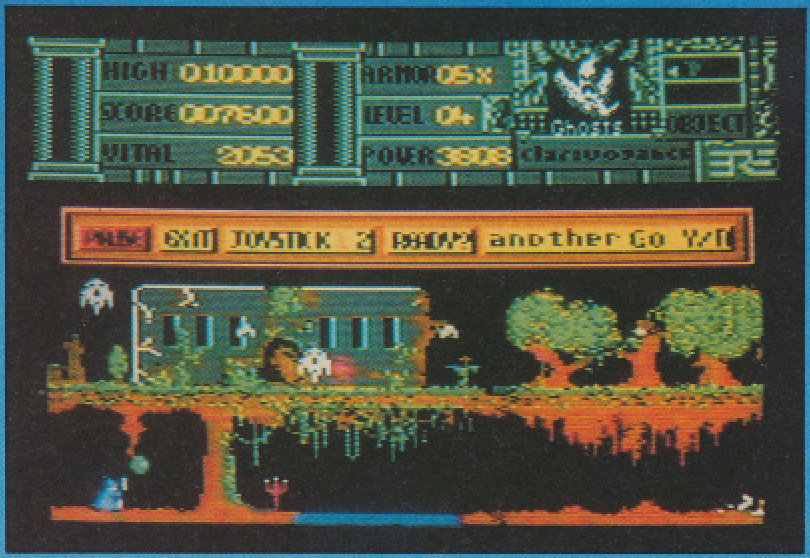
Your Electronic Counter Measures warn you when an enemy locks on to you, and fires when it's up to you to take the appropriate action and launch chaffs or flares or try and outfly them. When they're all destroyed, you return to the carrier for a debriefing.

Depending on your performance, you're either praised or perhaps honoured with a medal, or chewed out for disobeying orders (it's very tempting to blast a Mig when it's right in your sights), which may lead to a review board and some tough discipline.

F-14 Tomcat oozes quality, with its fast action gameplay and quality graphics. What I particularly like is the attention to detail. For example, when you log in your name, it is done on a form and the letters appear as if they were a signature. This is definitely a high-flyer.

Touchline:
Title: *F-14 Tomcat.* ***Supplier:*** *Activision.*

WARLOCK'S QUEST



The Karna is the ultimate jewel. You know, the one that rules the world, is the source of infinite power and is generally omniscient. Anyway, its powers have apparently had an off day, and the gem has been captured by no less a person than He-Whose-Name-Shall-Never-Be-Spoken, but who is known as the Lord of Wrongdoing. Whoever he is though, things look pretty bleak, and knees throughout the land have taken to trembling.

How you came to be involved in this little plot is another of life's great mysteries, but here you are, charged with the recovery of the aforementioned trinket and righting all the world's wrongs in one fell swoop.

The bauble is hidden somewhere deep within an underground complex of pits and caves, guarded by legions of evil characters. All you have to do is find it. For some unknown reason, you can only locate this bit of paste when you have first collected eight other random objects that just happen to be lying around on the off-chance that some day, some second-rate adventurer might just happen along looking for them. You can just imagine He-Whose-Name-Shall-Never-Be-Spoken saying "Aha! The entire power of the world is in my evil clutches, unless some do-gooder happens to collect the druid stone and fire trident etc. I know, I'll leave them out where he can find them."

Thus it is that you wander about killing critters with your faithful fire-spitting wand (how can you have a faithful wand? Is it called Fido?) picking up treasures, potions and other useful objects. Beware though, some of the items are cursed, whilst others simply kill you instantly. The caves are on two levels, and you can move between the two by means of a series of pits, ladders and teleports.

The caves load in different sections which are arranged in a stupid order, necessitating having to backtrack across the different loading zones. This is bad enough on disk, but I dread to think what it would be like on tape. A little more care in positioning some of the dead ends could have eliminated this problem entirely.

The graphics are dreadful – a cluttered screen filled with tiny little characters. I last saw graphics this size a few years ago. The blurb describes the graphics as detailed and witty – this is correct, they certainly made me laugh!

The top of the screen records your various stamina points, as well as indecipherable blobs representing the objects collected. There is also some sort of multiplier referring to your armour strength which goes up periodically. How significant this is remains to be seen, as there is no mention of it in the instructions. All in all, this game is a mess. It would make a fair budget game, but at full price, forget it.

Touchline:
***Title:** Warlock's Quest **Supplier:** Ere International **Price:** £9.95 (disk), £14.95 (cass).*

THE MUNSTERS

Originating in the mid-Sixties, *The Munsters* have now become something of a cult thanks to repeats of the television series on Channel 4. A whole new generation has come to enjoy the exploits of Herman, Grandpa, Eddie, Lily and Marilyn. The Again Again software house has managed to secure the rights for a computer game and, surprise surprise, the game is actually a reasonable representation of the TV series, unlike most games of films and TV shows.

The trouble with the Munsters is that they are too nice, and so the Devil himself has decided that they must be taught a lesson. His minions have kidnapped their Marilyn, and 1313 Mockingbird Avenue has been invaded by a whole host of ghosties, ghoulies and long-legged beasties, all intent on hindering any rescue attempt.

The game starts with you in control of Lily, and your first task is to activate Grandpa and Herman. This involves collecting a series of objects, but they must be picked up in the correct order. Doing this requires a lot of backtracking throughout the house, and you'll also need to make a couple of visits to the graveyard.

There are two main types of monster, those that drain all your energy away on contact, and those that don't! Your problem is to find a way of killing off the nasty monsters in order to access different parts of the house and acquire the objects needed to progress further with your quest. It doesn't take long before you discover that you must first kill off large numbers of harmless ghosts in order to boost your spell power sufficiently to have a go at the big beasties. Naturally, attacking the harmless ghosts does not exactly endear you to them, so they too start to drain away your precious life-blood.

Once Grandpa has been activated, he must protect Herman whilst together they locate Eddie. Then it's off to the chateau where Marilyn is being held captive, but

LED STORM



You've all played car racing games before – you know the sort of thing, left, right, accelerate, brake and jump. Jump?! Yes jump. In *LED Storm* from Capcom, one of the principal methods of removing your rival from the road is to leap on him from a great height, squashing him flat.

The idea behind the game is simple. There are nine different stages, each offering a different type of terrain – city, desert and so on. Each stage must be completed without running out of energy, in order to progress to the next one. There is no opportunity to practise a stage beforehand.

The futuristic course contains any number of hazards, some natural, some mechanical and some animal. Manic frogs attach themselves to your rear bumper, slowing you down and wasting precious energy. Only violent shaking of the joystick can dislodge them.

Naturally, you'd expect some sort of penalty if you should happen to drive off the road at a bend. Running repairs are effected by waiting for a friendly passing flying saucer to give you a lift. Where you are more likely to go astray is where the road disappears entirely. You have to line yourself up with a ramp and time your jump just right so that you land safely on the other side of the chasm.

Collisions with other cars just force you into a spin, again slowing you down and using up fuel. The further you progress, the more crowded the roads become. There are lorries carrying TNT which should be avoided at all costs, as they too blow you off the road. Other hazards that you might encounter include falling rocks, oil slicks, holes in road and floating mines.

The amount of energy that your car can carry is carefully calculated to make life as difficult for you as possible. Fortunately, you can top up *en route*. Energy pods float down on parachutes, and you can jump up to catch them. Passing space ships drop three different types of capsule to give you either bonus points, temporary invulnerability or again, extra energy. The final way to top up your fuel supply is by driving over the jerry cans strewn over the road. Each one collected lights up one letter in the word 'energy' at the bottom of the screen.

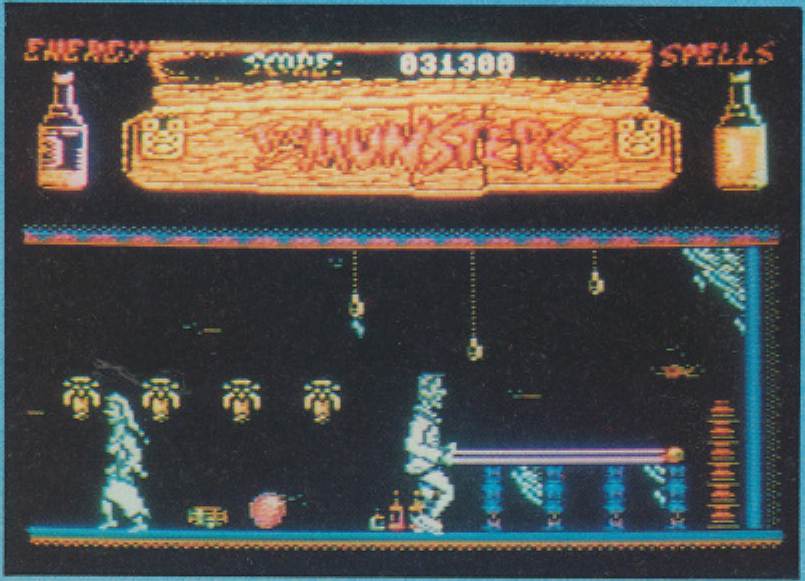
One area where *LED Storm* scores over rival racing games is that you don't have to go flat out all the time. Certainly, the faster you go the further along the track you get, but it does reduce considerably your chances of collecting anything in the road. Indeed, anything other than dead slow towards the end of the second stage, and you are guaranteed not to stay on the course.

The graphics are pretty good, and there are some excellent scrolling routines in operation, together with a catchy tune. But all that only serves to add gloss to what is already a highly addictive game.

Touchline:

***Title:** LED Storm. **Supplier:** Capcorn via US Gold. Units 2/3 Holford Way, Birmingham B7 7AX. **Tel:** 021 – 356 3388.*

first, the services of the pet family dragon are required to help clear the road for the family dragster hearse. All that



remains to be done now is for Herman to work out which of the doors Marilyn is hidden behind.

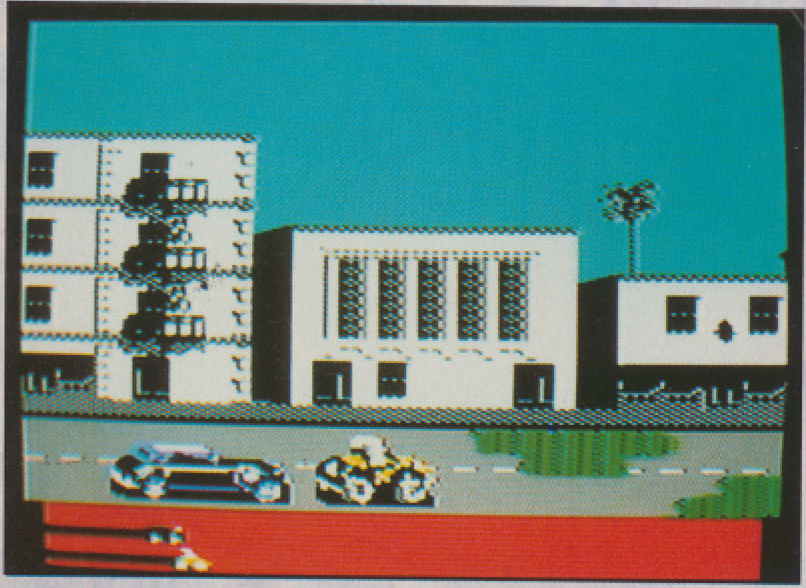
A pretty fair rendition of *The Munsters* theme tune plays throughout the game. Most of the characters are recognisable, although a bit lacking in detail and the monsters look good. The main problem with this game is that there is no rhyme or reason to the order that you have to do things in. It's just a case of trial and error until you find out what works and what kills you. Even then, you have to go through the same sequence of events every time you play.

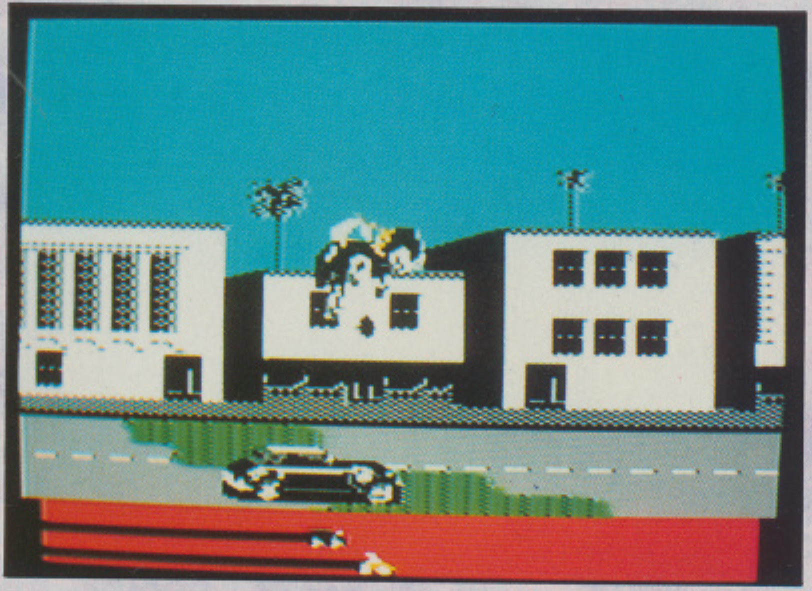
Having said that though, I did find *The Munsters* addictive, and continued playing it long after I had intended stopping. Definitely one of the better licensed tie-ins, and a must for any Munster fan.

Touchline:

***Title:** The Munsters. **Supplier:** Again Again, Units 3-7 Baileygate Industrial Estate, Pontefract, West Yorkshire. WF8 2LN. **Price:** £9.99 (cass).*

Who Framed Roger Rabbit





The scene is Hollywood in 1947, and Roger Rabbit is in big trouble. Sure, he's a superstar Toon and works every day at the Maroon Cartoon Studios but he's just been framed for the murder of the cartoon Gag King Marvin. To make things worse Marvin, who owned Toontown, promised to give it to the toons, but now not-so-funny business has reared its evil head and the despicable Judge Doom looks set to cash in.

In a three part game based on the smash hit film you have to race in Benny's cab to the Ink and Paint Club, find Marvin's real will, slug it out with a weasel and finally defeat Judge Doom to save Toontown.

Benny is a reckless cab driver, but your best bet to reach the Ink and Paint Club before the Judge. The first part of the game is a race against time through the streets of Los Angeles which are full of traffic to halt your progress, a battle to avoid pools of the Toon-dissolving dip that will cost you one of your lives, and big reds (trams) which have a similar if more obvious effect. Luckily, Benny's car is no ordinary vehicle and can leap with its accordion suspension and even drive along the roof tops.

Eventually you will reach the Ink and Paint Club where you must run around the tables collecting the papers that the Penguin waiters put out while avoiding the grip of the gorilla bouncer. You have to collect all the papers because Marvin's will is written on one of them, but unfortunately it's in invisible ink. Papers are collected by running around the tables and pressing the fire button at the right time. If you mistime it you'll grab either nothing or a drink. Toons and drink don't mix and so you'll lose valuable time as Roger Rabbit flips his lid under the temporary but dramatic effect of the drink.

The next stage takes you back into Benny's car for a last desperate dash to the Gag factory where all the cartoon gags are made. These gags become your weapons as you try and get the guarding weasels to laugh themselves to death and so you wear glasses with springy eyes, throw perma-slip bananas, cause a stir with itching powder and make a quick escape through a portable hole.

Success will save Toontown and mark the end of one of the most original games you'll play. It not only features some neat animation but gameplay that actually does justice to the film.

Touchline:
Title: *Who Framed Roger Rabbit.* ***Supplier:*** *Activision. Blake House, Manor Farm Road, Reading, Berks, RG2 0JN.* ***Tel:*** *(0734) 311666* ***Machine:*** *C64/128.*



ACTION SERVICE



Somewhere in Europe there is a top secret training centre where only the most fearless soldiers come to learn their trade and to earn their place in the elite team known as the Cobra Commandos.

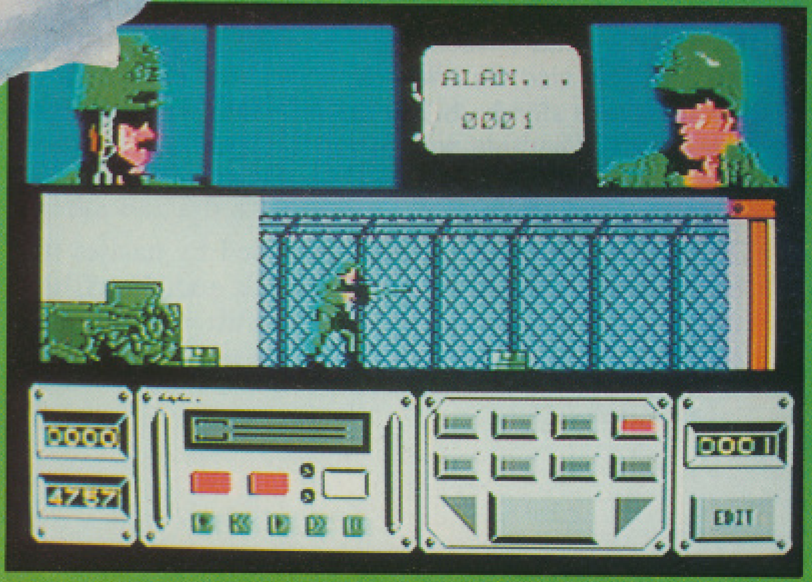
The centre is guarded by barbed wire and armed wardens, and houses the toughest assault course ever used. There are walls to climb, mines to hurdle, pipes to crawl through, vicious guard dogs to avoid, enemy soldiers to fight in either unarmed kung-fu combat or with your trusty repeating rifle.

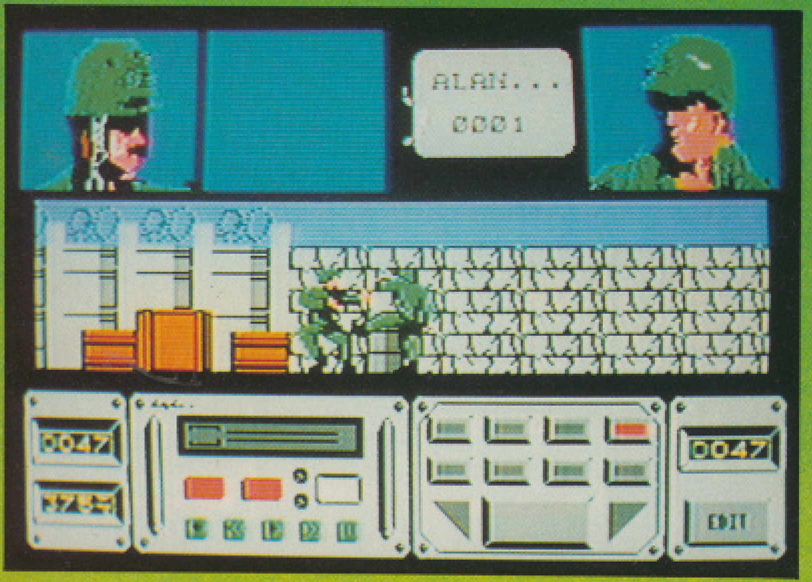
All the time your progress is being monitored by the instructors who make things as difficult as possible for you, and who deduct points for the slightest mistake. For example, enemy soldiers can only be fought in the appropriate style – unarmed soldiers cannot be shot or you'll lose 100 points, which is disastrous as points are hard to earn. If the instructors are feeling particularly vicious they may order you to drop and do ten press ups at any time during the course.

The course can be attempted in four different styles which determine the type of challenge you will face. They are physical (a lot of crawling), risk (avoid mines and handle explosives), combat (hand to hand fighting) or a mixture of these. Whatever you choose it is a daunting task.

If you manage to complete the course then the game includes a course constructor with which you can build yourself a new challenge or set one for a friend.

Although the course is tough to complete and you have different ways of approaching it, it does become repetitive and would probably be better if it was just the first, qualifying stage for a whole commando game complete with assault and sabotage missions. As it is, it's little more than a trial and error arcade game.

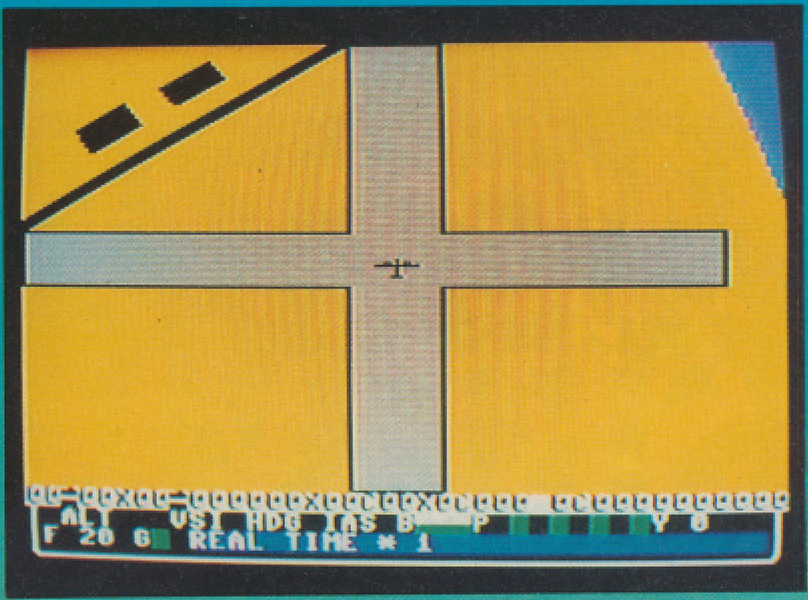




Touchline:
Title: *Action Service.* ***Supplier:*** *Cobra (Infogrames), Mitre House, Abbey Road, Enfield, Middx, EN1 2RQ.* ***Tel:*** *01-364 0123.* ***Machine:*** *C64/128* ***Price:*** *£9.95 (cassette), £14.95 (disk).*

GAMES UPDATE

FIRST OVER GERMANY



SSI's *B24*, released last year, showed that a flight simulator didn't need arcade-style action to be enjoyable, and became a big hit among thinking gamers. Now *B24* has a sequel in the form of *First Over Germany*, in which you will ultimately lead a squadron of B-17s in bombing attacks over Germany.

Such glories are a long way off when the game is loaded, as you begin as a trainee. You haven't any of the experience needed to command such a bomber, but they're short of pilots so you're pressed into service. Your first task is to assemble your crew from those available – this acts as an anti-piracy device, as the crew are listed in the manual as well as a strategy element. You then have to choose between crew that are skilled, fit or experienced.

There then follows a series of training missions in which you must take-off, fly in formation and then land. Your performance affects the health and safety of the crew, as well as your chances of promotion. Eventually, you are posted to Thurleigh airfield, from which you will lead the 306th squadron in 25 missions over Germany.

The aircraft's controls are similar to those in *B24*, but with a few additions. As well as controlling throttles, altitude and direction, you also have to control the guns, manned by the crew to fight-off enemy fighters as well as open the bomb doors and drop them on the target. You're judged on the accuracy of your bombs as well as how well you deal with hazards such as mechanical and engine failures, fuel usage and combat. Complete all 25 missions and you're a hero.

Now the bad news. Unfortunately, the game suffers from a bad case of line flicker, and superfluous characters sometimes flicker just where you need to focus on your controls. Anywhere else it would be a nuisance, but there it renders the game almost unplayable.

Touchline:
Title: *First Over Germany.* ***Supplier;*** *SSI (US Gold), Units 2/3 Holford Way, Holford, Birmingham B6 7AX,* ***Tel:*** *021 356 3388.* ***machine:*** *C64 disk.* ***Price:*** *£24.99.*

DYNAMIC DUO

Batman and Robin, Laurel and Hardy and Tom and Jerry. Everyone has their own idea of a partnership that could be known as the Dynamic Duo. Firebird has teamed up the most unlikely pair, as a duck and a dwarf combine to break out of the Night House.

I suppose we have to be thankful that Firebird decided against giving their cute heroes cute names, but nonetheless we are stuck with a most unlikely pair of heroes. The Dynamic Duo in question is lost in the dark-and-dingy Night House, and they have to find their way out against the usual incredible odds.

The only way out of the Night House is via the calculation room, which can only be found once you've collected ten parts of the room key. Unfortunately, these keys are hidden in treasure chests somewhere in the house, forcing you to search it all. In the Night House, getting from one room to another is a far from simple task – you have to either walk through doors or climb down holes in the ground, and to make things worse, some of the corridors are blocked, requiring an engineered explosion to clear the way through.

The Dynamic Duo can be controlled by two players working together, or by one, toggling between control of the duck or the dwarf. The duck starts the game perched on the dwarf's head (which can't be very pleasant for the dwarf), but can also fly away to scout out the territory. The dwarf moves slowly, but is the only one who can open treasure chests. The only way to move them both to a new location is to park the duck back on the dwarf's head and then move the dwarf.

Throughout the game you are harassed by nasties that can be shot by whatever weapons a duck and dwarf have in common, but they continue to dog both your progress and the little appeal this game has.

Touchline:
Title: *Dynamic Duos.* ***Supplier:*** *Firebird, 74 New Oxford Street, London WC1A 1PS.*



Contributions

So you own a Commodore? So you've written some programs? So why haven't you sent them to us?

Your Commodore is always on the look out for new programs, hints and tips, articles and even regular series. In fact if you have something that you think could be of use to other Commodore owners we want to hear about it.

So if you have got something which you think we may be interested in. Hpw do you go about submitting it to us?

Below you will find a list of guidelines that will help us to deal with any item that you send in to us. We don't expect everybody to be the next William Shakespeare but if you do follow these simple rules then it will make our job a lot easier.

1) If possible all material sent to the magazine should be typed or printed out on a computer printer.

2) All text should be double spaced i.e. there should be a blank line between each line of text. You should also leave a margin of about 10 characters around the text.

3) On the very first page you should put the following:
- Name of the article
- Machine that it is for
- Any extras required – disk, printer etc.
- Your name
- Your address
- Your telephone number

4) The top of every page should have the following information on it:
- Abbreviation of the article title
- Your name
- The page number

For example, suppose you had submitted an article on C64 interrupts. You should put something like the following at the head of the page:

Interrupts/J.Smith/1

5) Please make sure that you do not make any additional marks on your text especially underlining.

6) Try and write in clear concise English, it does not have to be a work of literature but it must be comprehensible.

7) On the bottom of each page you should put the word MORE if there are more pages to the article or ENDS if it is the last page.

8) If possible, enclose a listing of all programs.

9) Under no circumstances use a staple to hold the pages together. Use a paperclip instead.

10) Programs should be included on either disk or tape. Make sure that you SAVE two copies of every program so that we have a better chance of loading them if problems occur.

11) Programs under 10 lines can be included in the text. If your program is longer than this you must enclose a disk or cassette.

12) If your article needs any artwork then supply clear examples of what is needed. We don't expect you to be an artist but we do need to see what is required.

13) Photographs, if necessary, must be either black and white prints or colour slides. We can take shots ourselves so don't worry about this too much.

14) Submissions of any length are welcome. If you have a five line routine that you think may be of use to someone else we welcome it just as much as a full blown six part series.

15) Payment varies quite a lot and depends on quite a number of factors, such as complexity of program, presentation of program, number of magazine pages it takes up etc. Payment is generally between £10.00 and £800.00.

16) All payments are made in the month that the magazine containing your article has appeared in print.

17) If we do find your submission suitable for inclusion in the magazine we will write to you giving the terms of publication, the rate of payment and an agreement form. Prompt return of this form will allow us to use your program as soon as possible.

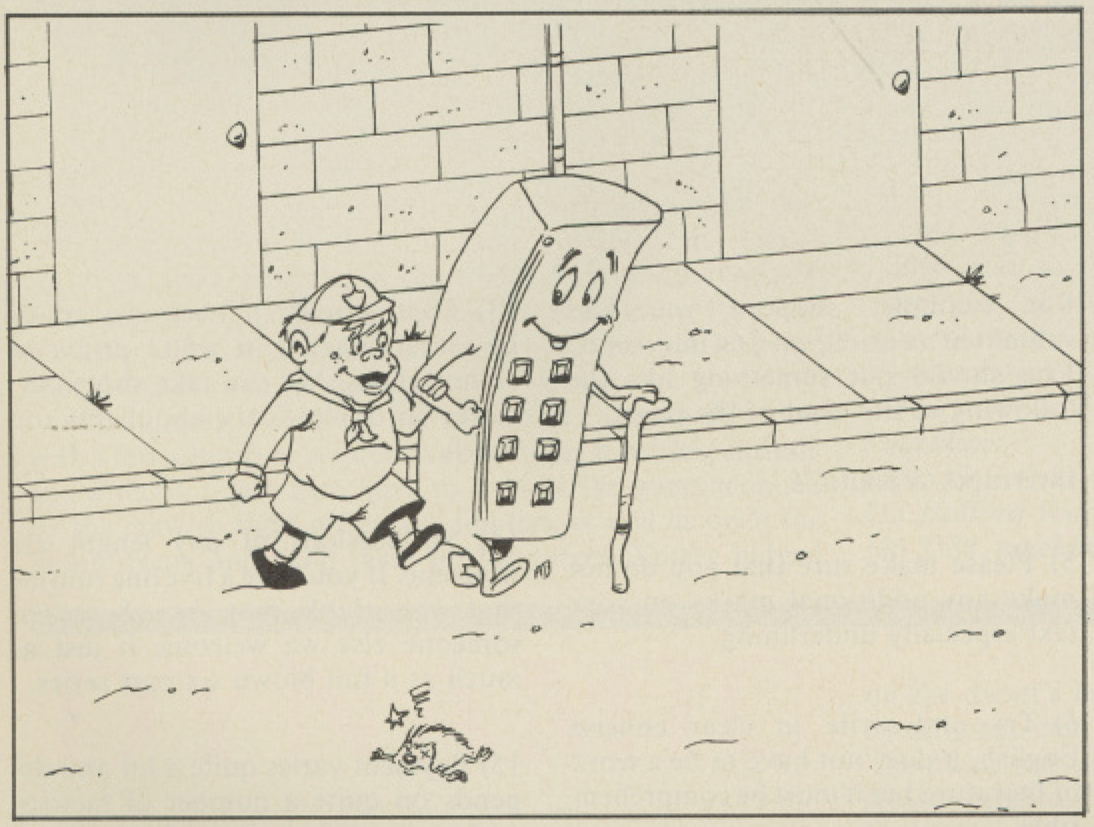
18) If you want the program returning to you, should we find it unsuitable for publication, then you should enclose a stamped self addressed envelope.

19) The last and most important point to make is 'get writing', we are waiting for your articles.

Aide de Comp

By Kerry Fowler

Add over 50 useful toolkit commands with the Super Aide disk



If you made a list of all the commands that may be useful when writing a program, it would be surprising if it consisted of more than 20 items. Free Spirit Software must have had a serious brainstorming session to squeeze every possible function into Super Aide. The really nice thing about it is that it principally lurks under the ROMs, and doesn't interfere with Basic memory at all.

Free Spirit has its roots in the vast US Commodore User Groups, and this is reflected in the software by virtue of several public domain programs being included to run within and beside Super Aide. The program itself breaks down into several constituent parts: DOS commands, programming aids, I/O functions, and a miscellaneous collection of functions.

Disk Commands

The DOS utility uses the conventional prefix of the 'at' symbol followed by the normal string command as used in the CBM standard PRINT command. To format a disk, the normal commands would be replaced by:

```
@N0:diskname,id
```

A couple of extra commands have been added to the normal features. A 'hash' sign followed by a device number greater than eight will direct the computer's output to the corresponding disk device. There is also a 'T' command which performs a cross between the DUPLICATE and COPY commands, and is equally useless to the majority of users. Unfortunately, the COPY command only copies a program onto the same disk, but under a different filename, while DUPLICATE copies a whole disk on a twin drive system.

With the 'T' command, a single program is transferred from one disk to another, but only on a dual drive system, and only if the second drive has a different drive number. All Commodore 1500 series drives have a fixed drive number of 0, and it's only on the older 4000 twin drive units that a drive value 1 was used, so on most systems this facility is useless.

Apart from these minor niggles, the DOS commands work well and save a lot of unnecessary opening and closing of files. Many programs include these commands, even the free wedge supplied with the drives, so there is nothing really amazing about this section, but it's essential for some sort of DOS to be included, and this is as good as any.

File Buddies

For loading and saving files, there are no less than six different commands. Using these, a load address can be quickly retrieved from the disk, files can be loaded from the directory listing, and programs can be saved with the minimum of effort.

A sequential text file can be read to the computer screen or printed out using a pound sign followed by the filename. This is the most satisfactory use, but the command also works with program files, allowing lines to be grabbed and re-used wherever they may be needed.

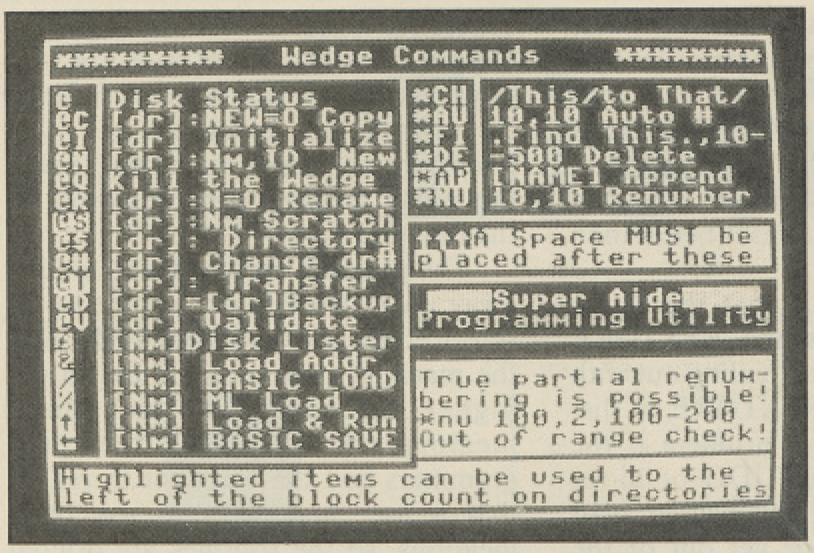
name. If a directory is listed to the screen, this command can be placed beside the printed out directory, and when the RETURN key is pressed the program loads to its correct location in memory.

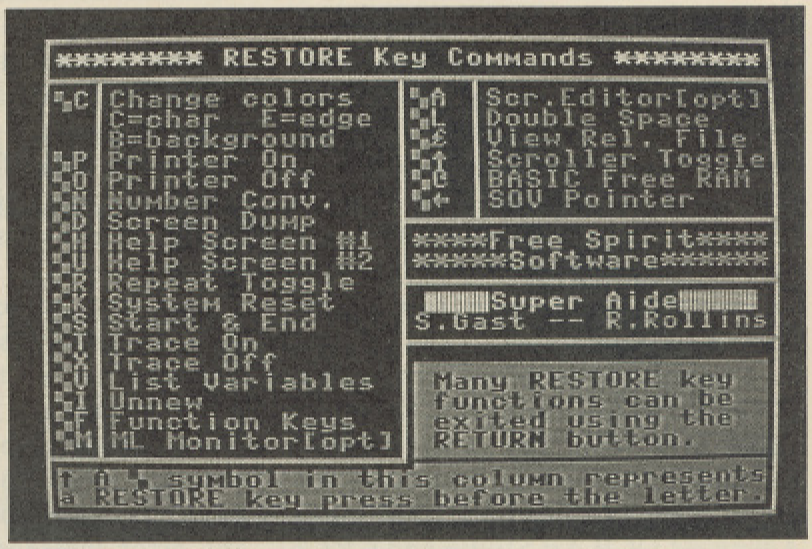
When any of the I/O commands are used in conjunction with a directory display, the messages generated are all printed on the same line. This means that the actual loading process does not affect the appearance of any of the other directory entries, which helps any future loads from the same list.

Program Aids

Half a dozen essential commands are available for program development. These are all prefixed by an asterisk.

AU, followed by the starting line number and the line increment, initiates automatic line numbering. Each time a program line is entered, the next line number in the sequence is printed out and the cursor place made ready for the new commands to be typed in.





When a program is being written that will communicate with a printer, it's often easier to write it so that the PRINT statements are directed to the screen. This can mean a laborious job of changing all of the commands to PRINT afterwards. Super Aide contains a CHange command which can make this job easier. This will search through a program for a given string and change each occurrence to the newly specified command. Similarly, a specific command can be found using the FI command.

The DE command deletes blocks of lines, and programs can be built up in modular form by using the APpend command. This adds a program onto the end of any program in memory, and then a ruNUmber command will tidy up the line numbers and any line jump commands where necessary.

Amazing Miscellany

Up until now, all of the commands are useful but hardly earth-shattering, and not really worthy of the £14.95 price tag. A few hours with the relevant copies of *Your Commodore* and anyone could knock it up for themselves. For me the strength of this package lies in the miscellaneous commands accessed by pressing the RESTORE key. When the key is pressed, the computer acknowledges the fact by changing the border colour. Any keypress that follows performs a different function. All of these commands are summarised elsewhere, so the more notable inclusions will be described here.

First and foremost is the special listing facility accessed with the upward pointing arrow. This is fantastic, because it makes it unnecessary to list programs. When the cursor is taken to the bottom of the screen, the first line of the program scrolls into view, and the scroll also works in reverse when the cursor is taken to the top of the screen. Being able to scroll back and forth through a listing makes debugging a lot easier.

Another debugging aid is a simple Trace command which allows a program to be run at a preset speed. A small box at the top right of the screen shows the current line number and command being executed, while the rest of the screen appears as it would if the program was running normally. Even if the fault occurs well into a program, it can run at normal speed until the point just before the problem occurs and, because the RESTORE button works on an interrupt, the program can be halted with this key and the trace initialised for fault finding.

At any point a program can be stopped and the current variable values listed out, the length of a stored program can be calculated beside the start and end addresses, low resolution screens can be dumped to the printer, and the numbers can be converted between any of the three common bases – decimal, hexadecimal or binary.

Whenever one of these RESTORE commands is called, the information is printed on the screen, but the original screen is returned when the function is terminated.

Designing a low resolution graphics screen is eased by one of the two optional programs which can be loaded with, and used from, the Super Aide program. Full editing facilities are allowed with this facility, and an existing screen can be tarted up with a few shapely graphics, or it can be designed from scratch.

Once the masterpiece is completed, a program to reproduce it is generated which includes screen colours, otherwise troublesome reversed characters and upper and lower case selection. One thing it doesn't do is to replace the extreme bottom right hand corner character with a POKE to prevent screen scroll-up when this line is printed.

The second optional utility is the well-known XMON monitor, which has been around in one form or another since the early PET days. This is a very good machine code monitor which not only allows the usual interrogative functions and disassemblies, but also has a memory move routine and location modifier which adds to its usefulness.

The icing on the cake is the walk facility, which allows the programmer to run a coded program one command at a time. As each line of code is executed, a printout of the current status of the processor registers, counter and status and stack states are printed out alongside a disassembly of the next command for execution.

What's Up Doc?

The documentation is rudimentary, to say the least. The manual consists of a printout of the help screens contained within Super Aide itself and therefore there is no contents page or index. This doesn't make it easy to become familiar with the system. An example of the problems that this causes is with two extra programs which form Basic/code additions to the Super Aide program, and deal admirably with hi-res screen dumps to the printer and disk doctoring. The manual mentions that a hi-res dump is on the disk, and perusal of the directory eventually reveals the filename NON.CBM.HR.DUMP – not a very friendly title.

The program menu shows that it

will dump images created with Simon's Basic, UltraBasic 64, Doodle or Koala Printer, which is all very fine if you own any of these programs – I don't! There is also a standard hi-res dump for other images, but there is no documentation to say where the code part of the program lies, so it is easy to overwrite the code routine by accident.

I've had the program for a couple of weeks, but fathoming how the dump works took some time, and I initially resorted to converting files from my usual graphics packages (Rainbird's Advanced OCP Art Studio and CRL's Image System) to Koala format and printing out the resultant file. For a beginner without the resources of a good library, I'm afraid that this facility would be beyond them.

The disk doctor is easier to use and performs adequately well. It allows sectors to be read from disk and displays them on the screen. As the cursor is moved along the sector bytes, a display at the lower part of the screen shows the screen character as a more meaningful numerical value, and a few words describe the function of the byte whether it be a sector pointer, filename character or just a humble data bye. Good though this utility is, it will not seduce me away from my usual disk utility, but for those without any form of disk sector access, this is better than nothing.

My final gripe is that the Super Aide program uses the RESTORE key, which means that bailing out with RUN/STOP and RESTORE is disabled. This can be a problem if the program locks up in UDG or hi-res mode, because you can neither read any error message or get out of the problem without resorting to the reset button on the C128 or the even more drastic power switch on the C64.

There is a second way to get out of trouble if a syntax error occurs when using hi-res or UDG modes. Super Aide allows the function keys to be defined, so if a series of reset commands are stored on these keys, a few presses will solve the problem. It would be nice if key definitions could be saved, however, instead of having to redefine them at each power-up.

Conclusion

Despite its faults, Super Aide is a very powerful utility which greatly facilitates program development. Any features which aren't there (and there's not many missing) can be stored on the function keys.

The program utilities are all hidden away under the ROMs, but the lo-res screen editor is stored from 49152, and the machine code monitor lies in the higher reaches of normal Basic memory. Fortunately, the programmers had the foresight to realise that a user may wish to use these locations, so the routines are offered as option extras which may or may not be loaded at power-up.

I was very impressed with the range of commands which this package offers, and would certainly recommend it to any programmer.

Touchline:

Product: *Super Aide.* ***Price:*** *£14.95.* ***Supplier:*** *Financial Systems Software Ltd, 18 High Street, Pershore, Worcs WR10 1BG.* ***Tel:*** *(0386) 553153.* ***Line-up:*** *C64 or C128 in C64 mode, disk drive, printer (optional).*

Super Aide Commands

Disk Wedge

	display disk error message
[8-15]	direct commands to new device
$	directory to screen
C	copy a file
D	duplicate disk
I	initialise drive
N	format disk
Q	quit disk wedge
R	rename a file
S	delete a file
T	copy a file to a new drive
V	validate disk files

I/O Commands

£	list file to screen
&	display load address of file
/	load a Basic file
%	load a machine code file
	load and run Basic file
	save a Basic file

Toolkit Commands

*AU	automatic numbering
*AP	append a file
*CH	search and replace
*DE	delete program lines
*FI	find a listing command
*NU	renumber a program

RESTORE Functions

(press restore key followed by:)

A	low-res screen editor
C	change display colours (followed by C for text colour B for background E for border)
D	lo-res screen dump
F	define function keys
H	display help screen 1
I	unNEW
K	reset computer
L	double space printout (screen or printer)
M	enter XMON 64
N	number conversion no prefix = decimal $ = hexadecimal % = binary
O	printer echo off
P	printer echo on
R	toggle full key repeat
S	display length of disk file
T	trace on
U	display help screen 2
V	list variables and values
X	trace off
£	view a relative file record
	scroll inhibit
	display free memory
	location of start of variables

Listings

Flow of Ideas

PROGRAM: DIRECTOR

```
BE  100 POKE53280,0:POKE53281,0:GOTO440
39  110 GET#8,A$:IFA$=""THENA$=CHR$(0)
F6  120 RETURN
55  130 INPUT#15,E,E$,T,S
63  140 IFE>0THENPRINT"[C3]"E;E$" "T","S:END
18  150 RETURN
9F  160 GOSUB110
07  170 DN$=DN$+A$
3A  180 RETURN
78  190 GET#8,A$:IFA$=""THEN190
A0  200 IFSTTHEN430
A8  210 IFASC(A$)<128THENF$="DEL":GOTO260
20  220 IFASC(A$)AND56THEN190
BD  230 P$=" ":F=(ASC(A$)AND63):F=F+2*(F-1):IFASC(A$)AND64THENP$="[RVSON]<[RVSOFF]"
E9  240 F$=MID$("SEQPRGUSRREL",F,3)
C9  250 GOSUB110
DA  260 T$=RIGHT$(" "+STR$(ASC(A$)),2)
B2  270 GOSUB110
95  280 S$=RIGHT$(" "+STR$(ASC(A$)),2)
67  290 N$=""
53  300 FORA=1TO16
28  310 GET#8,A$:N$=N$+A$
C3  320 NEXT
BA  330 FORA=1TO9:GET#8,A$:NEXT
68  340 GOSUB110
17  350 BL=ASC(A$)
54  360 GOSUB110
EF  370 BL=BL+ASC(A$)*256:IFF$<>"DEL"THENBT=BT+BL
D5  380 B$=RIGHT$("  "+STR$(BL),3)
4C  390 PRINT"[WHITE]";:IFF$="DEL"THENPRINT"[C1]";
B2  400 POKE212,128
99  410 PRINTN$;:POKE212,0
A9  420 PRINT"[C8]"P$" [C6]"F$" [C3]"B$"[SPC3,C7]"T$"[SPC4]"S$
21  430 RETURN
F1  440 PRINT"[CLR,YELLOW,REV N,SL]OADING HEADER BLOCK"
8A  450 OPEN15,8,15:PRINT#15,"IO":GOSUB130
CD  460 BT=0:DIMBM$(35)
75  470 OPEN8,8,1,"$,S,R":GOSUB130
E2  480 FORA=1TO2:GET#8,A$:NEXT:A=0
14  490 FORA=1TO35
C8  500 GOSUB110
22  510 BM=BM+ASC(A$):BM$(A)=RIGHT$(" "+STR$(ASC(A$)),3)
15  520 GET#8,A$:GET#8,A$:GET#8,A$
96  530 NEXT
F5  540 DN$="[CLR,REV N,YELLOW,SD]ISK: [RVSON]"+CHR$(34)
3E  550 FORA=1TO16:GOSUB160:NEXT
F3  560 DN$=DN$+CHR$(34)
FB  570 FORA=1TO15:GOSUB160:NEXT
8F  580 PRINTDN$:B=0
82  590 PRINT"[DOWN,WHITE,SF]ILENAME[SPC9,C6,ST]YPE [C3,SS]IZE [C7,ST]RACK [SS]ECTOR[DOWN]"
82  600 GOSUB190:B=B+1:IFF$<>"DEL"THENPT=PT+1
8E  610 IFSTTHEN630
EB  620 IFB<20THEN600
78  630 POKE198,0:PRINTTAB(12)"[RED,RVSON] [SP]RESS [SA]NY [SK]EY [RVSOFF]";
F9  640 GET K$:IFK$=""THEN640
EA  650 IFST=0THEN580
2D  660 GOSUB130:CLOSE8:CLOSE15
FC  670 PRINT"[CLR,WHITE,SPC11,SV]ITAL [SS]TATISTICS"
77  680 PRINT"[SPC11,CT16]"
5F  690 PRINT"[YELLOW,SN]UMBER OF PROGRAMS ="PT
FD  700 PRINT"[SB]LOCKS USED ="BT
5D  710 BF=BM-VAL(BM$(18))
21  720 PRINT"[SB]LOCKS FREE ="BF;
B7  730 A$=""
1B  740 IF664-BT<>BFTHENA$="[C3,SB]LOCK COUNT MISMATCH![YELLOW]"
8E  750 PRINTA$
B6  760 PRINT"[SD]IRECTORY BLOCKS FREE ="BM$(18)
84  770 A$="[GREEN,S-,SPC36,S-]"
07  780 PRINT"[DOWN,GREEN,CA,S*30,CS]"
66  790 PRINT"[GREEN,S-,SF]REE TRACK SECTORS:[SPC17,S-]"
63  800 PRINT"[GREEN,S-,CT19,SPC17,S-]"
F4  810 PRINT"[GREEN,S-,C8,ST]RACK:  1  2  3  4  5  6  7  8  9 10[GREEN,S-]"
DD  820 PRINT"[GREEN,S-,C7,ST]OTAL:";:FORA=1TO10:PRINT"[C7]";:IFVAL(BM$(A))=21THENPRINT"[C2]";
86  830 PRINTBM$(A);:NEXT:PRINT"[GREEN,S-]":PRINTA$
66  840 PRINT"[GREEN,S-,C8,ST]RACK: 11 12 13 14 15 16 17 18 19 20[GREEN,S-]"
91  850 PRINT"[GREEN,S-,C7,ST]OTAL:";:FORA=11TO17:PRINT"[C7]";:IFVAL(BM$(A))=21THENPRINT"[C2]";
5E  860 PRINTBM$(A);:NEXT
E0  870 FORA=18TO20:PRINT"[C7]";:IFVAL(BM$(A))=19THENPRINT"[C2]";
98  880 PRINTBM$(A);:NEXT:PRINT"[GREEN,S-]":PRINTA$
04  890 PRINT"[GREEN,S-,C8,ST]RACK: 21 22 23 24 25 26 27 28 29 30[GREEN,S-]"
DB  900 PRINT"[GREEN,S-,C7,ST]OTAL:";:FORA=21TO24:PRINT"[C7]";:IFVAL(BM$(A))=19THENPRINT"[C2]";
14  910 PRINTBM$(A);:NEXT
4E  920 FORA=25TO30:PRINT"[C7]";:IFVAL(BM$(A))=18THENPRINT"[C2]";
AA  930 PRINTBM$(A);:NEXT:PRINT"[GREEN,S-]":PRINTA$
6E  940 PRINT"[GREEN,S-,C8,ST]RACK: 31 32 33 34 35[SPC15,GREEN,S-]"
9A  950 PRINT"[GREEN,S-,C7,ST]OTAL:";:FORA=31TO35:PRINT"[C7]";:IFVAL(BM$(A))=17THENPRINT"[C2]";
50  960 PRINTBM$(A);:NEXT:PRINT"[SPC15,GREEN,S-]"
BA  970 PRINT"[CZ,S*36,CX]"
```

Anti-Freeze

PROGRAM: ANTI-FREEZE

```
A1  100 REM *****************************
3C  110 REM * ANTI-FREEZE BASIC LOADER  *
86  120 REM *---------------------------*
96  130 REM * BY N.HIGGINS JANUARY 1989 *
8A  140 REM *---------------------------*
56  150 REM *  DETECTS FREEZER BUTTON.  *
E5  160 REM *****************************
25  170 REM
3B  180 REM
97  190 PRINTCHR$(147):POKE53281,0:POKE646,7
5C  200 PRINT"[DOWN2,RIGHT]PLEASE WAIT - POKEING IN MACHINE CODE"
58  210 GOSUB460:POKE53280,0
FF  220 PRINT"[CLR,DOWN2,RIGHT2]ANTI-FREEZE M/C NOW IN MEMORY"
6C  230 PRINT"[DOWN2,RIGHT2]SELECT OPTION (1-3)"
13  240 PRINT"[DOWN2,RIGHT2](1) SAVE CODE TO DISK"
CC  250 PRINT"[DOWN,RIGHT2](2) SAVE CODE TO TAPE"
FF  260 PRINT"[DOWN,RIGHT2](3) EXIT"
7F  270 GETA$:IFA$=""THEN270
EB  280 A=VAL(A$):IFA<1ORA>3THEN270
9C  290 IFA=3THEN410
FF  300 A$="PREPARE CASSETTE FOR
```

```
     SAVING":D=1
SE   310 IFA=1THENA$="PLACE REQUI
     RED DISK IN DRIVE":D=8
CO   320 PRINT"[CLR,RIGHT]";A$:PR
     INT"[DOWN3,RIGHT3]PRESS ANY
     KEY WHEN READY"
BE   330 POKE198,0:WAIT198,1:POKE
     198,0
5A   340 REM ------ SAVE MACHINE
     CODE -------
B2   350 SYS57812"ANTI-FREEZE M/C
     ",D,1:REM * FILENAME *
E7   360 POKE193,0:POKE194,192:RE
     M * START ADDRESS TO SAVE ($
     C000) *
71   370 POKE174,104:POKE175,193:
     REM * END ADDRESS TO SAVE-1
     ($C168) *
F2   380 REM
C5   390 SYS62957:REM * PERFORM S
     AVE *
1E   400 REM
A4   410 PRINT"[CLR,DOWN,RIGHT]OK
     AY - SYS49152 TO TEST CARTRI
     DGE"
25   420 END
20   430 REM
36   440 REM
4C   450 REM
F1   460 FORL=0TO22:CX=0:FORD=0TO
     15:READA:CX=CX+A:POKE49152+L
     *16+D,A:NEXTD
F6   470 POKE53280,(PEEK(53280)AN
     D15)+1
DB   480 READA:IFA<>CXTHENPRINT"E
     RROR IN LINE";500+(L*10):STO
     P
1D   490 NEXTL:RETURN
9D   500 DATA32,68,229,169,0,141,
     32,208,141,33,208,169,7,141,
     134,2,1714
0B   510 DATA162,0,189,82,192,240
     ,6,32,210,255,232,208,245,16
     2,25,154,2394
FF   520 DATA169,200,141,3,1,173,
     3,1,201,200,240,249,162,255,
     154,32,2184
8A   530 DATA68,229,169,10,141,13
     4,2,162,0,189,253,192,240,6,
     32,210,2037
4D   540 DATA255,232,208,245,169,
     0,133,198,32,228,255,201,32,
     208,249,76,2721
A3   550 DATA0,192,13,13,32,32,32
     ,32,32,32,32,32,32,65,78,84,
     733
3A   560 DATA73,45,70,82,69,69,90
     ,69,32,82,79,85,84,73,78,69,
     1149
6B   570 DATA13,32,32,32,32,32,32
     ,32,32,32,45,45,45,45,45,45,
     571
2A   580 DATA45,45,45,45,45,45,45
     ,45,45,45,45,45,45,13,13,13,
     624
41   590 DATA32,32,32,80,76,69,65
     ,83,69,32,80,82,69,83,83,32,
     999
32   600 DATA84,72,69,32,70,82,69
     ,69,90,69,32,66,85,84,84,79,
     1136
B8   610 DATA78,32,79,78,13,13,32
     ,32,32,89,79,85,82,32,67,65,
     888
76   620 DATA82,84,82,73,68,71,69
     ,44,84,72,69,78,32,85,83,69,
     1145
2C   630 DATA32,84,72,69,32,39,82
     ,85,78,39,13,13,32,32,32,79,
     813
31   640 DATA80,84,73,79,78,32,79
     ,82,32,83,73,77,73,76,65,82,
     1148
1B   650 DATA32,84,79,32,82,69,84
     ,85,82,78,46,13,0,13,13,32,8
     24
A0   660 DATA32,32,73,32,71,79,84
     ,67,72,65,32,33,32,89,79,85,
     957
C3   670 DATA32,72,65,86,69,32,74
     ,85,83,84,32,85,83,69,68,32,
     1051
75   680 DATA84,72,69,13,13,32,32
     ,32,32,32,32,32,32,32,32,32,
     603
ED   690 DATA70,82,69,69,90,69,32
     ,66,85,84,84,79,78,46,13,13,
     1029
B3   700 DATA13,32,32,32,80,82,69
     ,83,83,32,84,72,69,32,39,83,
     917
13   710 DATA80,65,67,69,66,65,82
     ,39,32,84,79,32,84,82,89,32,
     1047
0E   720 DATA65,71,65,73,78,13,0,
     10,101,8,53,40,21,8,85,74,76
     5
```

Multi-Coloured List

PROGRAM: MULTI-COLOURED LIST

```
A1   100 REM ********************
     *********
B6   110 REM *    MULTI-COLOURED
     LIST    *
86   120 REM *-------------------
     --------*
94   130 REM *   BY N.HIGGINS DECE
     MBER 88 *
8A   140 REM *-------------------
     --------*
E6   150 REM * SYS53076,LINE NO,C
     OL(0-15)*
E5   160 REM ********************
     *********
25   170 REM
3B   180 REM
97   190 PRINTCHR$(147):POKE53281
     ,0:POKE646,7
5C   200 PRINT"[DOWN2,RIGHT]PLEAS
     E WAIT - POKEING IN MACHINE
     CODE"
7C   210 GOSUB550:POKE53280,0
C0   220 PRINT"[CLR,DOWN2,RIGHT2]
     MULTI-COLOURED LIST M/C NOW
     IN MEMORY"
6C   230 PRINT"[DOWN2,RIGHT2]SELE
     CT OPTION (1-3)"
13   240 PRINT"[DOWN2,RIGHT2](1)
     SAVE CODE TO DISK"
CC   250 PRINT"[DOWN,RIGHT2](2) S
     AVE CODE TO TAPE"
FF   260 PRINT"[DOWN,RIGHT2](3) E
     XIT"
7F   270 GETA$:IFA$=""THEN270
E8   280 A=VAL(A$):IFA<1ORA>3THEN
     270
9C   290 IFA=3THEN410
FF   300 A$="PREPARE CASSETTE FOR
      SAVING":D=1
5E   310 IFA=1THENA$="PLACE REQUI
     RED DISK IN DRIVE":D=8
C0   320 PRINT"[CLR,RIGHT]";A$:PR
     INT"[DOWN3,RIGHT3]PRESS ANY
     KEY WHEN READY"
BE   330 POKE198,0:WAIT198,1:POKE
     198,0
5A   340 REM ------ SAVE MACHINE
     CODE -------
63   350 SYS57812"M.COL.LIST M/C"
     ,D,1:REM * FILENAME *
4D   360 POKE193,32:POKE194,207:R
     EM * START ADDRESS TO SAVE (
     $CF20) *
1C   370 POKE174,245:POKE175,207:
     REM * END ADDRESS TO SAVE-1
     ($CFF4) *
F2   380 REM
C5   390 SYS62957:REM * PERFORM S
     AVE *
1E   400 REM
49   410 PRINT"[CLR,DOWN,RIGHT]OK
     AY - SYS53076,LINE NO,COLOUR
      (0-15)"
25   420 END
20   430 REM
91   540 REM
53   550 FORL=0TO13:CX=0:FORD=0TO
     15:READA:CX=CX+A:POKE53024+L
     *16+D,A:NEXTD
CC   555 POKE53280,(PEEK(53280)AN
     D15)+1
E7   560 READA:IFA<>CXTHENPRINT"E
     RROR IN LINE";1160+(L*10):ST
     OP
0A   570 NEXTL
C8   580 RETURN
DF   590 REM
D5   600 REM
E1   620 REM
DA   630 DATA 144,5,28,159,156,30
     ,31,158,129,149,150,151,152,
     153,154,155,1904
6C   640 DATA 82,69,77,34,141,5,0
     ,13,32,76,73,78,69,32,69,88,
     938
AF   650 DATA 73,83,84,83,46,67,7
     9,78,84,73,78,85,69,63,32,89
     ,1166
DC   660 DATA 47,78,13,0,32,253,1
     74,32,107,169,165,20,133,251
     ,165,21,1660
16   670 DATA 133,252,32,155,183,
     224,16,144,3,76,8,175,134,25
     3,32,19,1839
6C   680 DATA 166,144,27,162,0,18
     9,55,207,240,6,32,210,255,23
     2,208,245,2378
DD   690 DATA 32,228,255,240,251,
     201,89,240,5,201,78,208,243,
     96,166,253,2786
73   700 DATA 160,5,189,32,207,15
     3,48,207,166,251,165,252,134
     ,99,133,98,2299
2F   710 DATA 162,144,56,32,73,18
     8,32,223,189,32,135,180,32,1
     66,182,162,1988
D9   720 DATA 0,189,0,1,157,0,2,2
     40,3,232,208,245,160,0,185,4
     8,1670
03   730 DATA 207,157,0,2,240,4,2
     32,200,208,244,173,2,3,141,2
     32,207,2252
76   740 DATA 173,3,3,141,237,207
     ,169,231,141,2,3,169,207,141
     ,3,3,1833
69   750 DATA 162,255,160,1,76,13
     4,164,169,131,141,2,3,169,16
     4,141,3,1875
02   760 DATA 3,76,116,164,64,93,
     2,93,66,29,2,21,74,21,64,95,
     983
```

Printfx Loader

PRINTFX LOADER

```
10 REM ***************************
20 REM *                         *
30 REM * PRINTFX +4 BASIC LOADER *
40 REM *                         *
50 REM ***************************
60 REM
70 WAIT 1:WAIT 0
80 PRINT CHR$(27)"RPRINTFX +4 BASIC LOADER PROGRAM"
90 PRINT"WRITTEN DECEMBER '88 BY M.R EVERINGHAM"
100 PRINT"
"
110 AD%=4097:FOR LI=1000 TO 3550 STEP 10
120 PRINT"STORING DATA LINE"LI
130 CH%=0:FOR BY=0 TO 7
140 READ DA%:CH%=CH%+DA%
150 IF DA%<0 OR DA%>255 THEN PRINT"INVALID NUMBER IN LINE"LI:END
160 POKE AD%+BY,DA%:NEXT BY
170 READ VR%:IF CH%<>VR% THEN PRINT"CHECKSUM ERROR IN LINE"LI:END
180 AD%=AD%+8:NEXT LI
190 PRINT"STORAGE COMPLETE - DATA 100% CORRECT"
200 PRINT"DO YOU WANT TO USE [T]APE OR [D]ISK?"
210 OPEN:GET KE$:CLOSE OR LET("TD",KE$)
220 IF KE$="T"THEN POKE 208,1:GOTO POKE 208,8
230 PRINT"INSERT PRINTFX ";:IF KE$="T"THEN PRINT"TAPE";:GOTO PRINT"DISK";
240 PRINT" AND PRESS RETURN"
250 OPEN:GET KE$:CLOSE OR KE$=CHR$(13)
260 FOR BY=0 TO 3:POKE 209+BY,PEEK(43+BY):NEXT BY
270 PRINT"SAVING PRINTFX BASIC LOADER..."
280 SAVE"PRINTFX LOADER",PEEK(208)
290 PRINT"SAVING PRINTFX SYSTEM PROGRAM..."
300 POKE 43,1:POKE 44,16:POKE 45,253:POKE 46,23
310 SAVE"PRINTFX",PEEK(208)
320 POKE 43,PEEK(209):POKE 44,PEEK(210):POKE 45,PEEK(211):POKE 46,PEEK(212)
330 PRINT"SAVING COMPLETE - RESET MACHINE"
340 END
910 REM
920 REM *****************************
930 REM *                           *
940 REM * MACHINE-CODE DATA SECTION *
950 REM *                           *
960 REM *    (START AT LINE 1000)   *
970 REM *                           *
980 REM *****************************
990 REM
1000 DATA 14,16,0,0,158,32,52,49,321
1010 DATA 49,50,58,162,0,0,0,76,395
1020 DATA 124,16,169,215,160,21,133,34,872
1030 DATA 132,35,160,0,132,11,136,200,806
1040 DATA 32,165,4,56,241,34,240,247,1019
1050 DATA 201,128,240,34,177,34,48,3,865
1060 DATA 200,208,249,200,230,11,24,152,1274
1070 DATA 101,34,133,34,144,2,230,35,713
1080 DATA 24,160,0,177,34,208,217,56,876
1090 DATA 32,121,4,76,106,137,5,11,492
1100 DATA 200,76,212,137,170,160,215,132,1302
1110 DATA 34,160,21,132,35,76,158,139,755
1120 DATA 201,128,144,20,201,148,176,16,1034
1130 DATA 56,233,128,10,168,185,127,22,929
1140 DATA 72,185,126,22,72,76,115,4,672
1150 DATA 76,161,148,32,136,216,169,83,1021
1160 DATA 160,23,32,136,144,169,19,160,843
1170 DATA 16,141,12,3,140,13,3,169,497
1180 DATA 85,160,16,141,14,3,140,15,574
1190 DATA 3,169,97,160,16,141,16,3,605
1200 DATA 140,17,3,169,64,133,44,169,739
1210 DATA 0,141,0,64,169,255,133,117,879
1220 DATA 76,28,18,32,121,4,201,145,625
1230 DATA 208,6,32,115,4,169,128,96,758
1240 DATA 201,254,240,3,76,161,148,32,1115
1250 DATA 115,4,201,148,208,246,32,115,1069
1260 DATA 4,169,0,96,32,180,16,133,630
1270 DATA 11,169,127,45,211,23,5,11,602
1280 DATA 141,211,23,96,32,180,16,74,773
1290 DATA 133,11,169,191,76,220,16,32,848
1300 DATA 180,16,74,74,133,11,169,223,880
1310 DATA 76,220,16,32,180,16,74,74,688
1320 DATA 74,133,11,169,239,76,220,16,938
1330 DATA 32,180,16,74,74,74,74,133,657
1340 DATA 11,169,247,76,220,16,32,180,951
1350 DATA 16,10,42,42,42,133,11,169,465
1360 DATA 251,76,220,16,32,132,157,224,1108
1370 DATA 2,144,3,76,28,153,138,10,554
1380 DATA 133,11,169,253,76,220,16,32,910
1390 DATA 132,157,224,2,144,3,76,28,766
1400 DATA 153,134,11,169,254,76,220,16,1033
1410 DATA 32,132,157,224,4,144,3,76,772
1420 DATA 28,153,142,212,23,96,169,208,1031
1430 DATA 141,228,2,96,169,212,141,228,1217
1440 DATA 2,96,169,62,141,215,18,76,779
1450 DATA 87,17,201,36,240,19,32,225,857
1460 DATA 157,192,0,240,3,76,28,153,849
1470 DATA 141,228,2,169,63,141,215,18,977
1480 DATA 96,32,115,4,32,175,17,10,481
1490 DATA 10,10,10,170,32,115,4,32,383
1500 DATA 175,17,133,11,138,5,11,141,631
1510 DATA 228,2,32,115,4,201,48,208,838
1520 DATA 17,32,115,4,201,48,208,10,635
1530 DATA 32,115,4,76,124,17,201,71,640
1540 DATA 144,3,76,161,148,201,65,144,942
1550 DATA 3,233,55,96,201,58,176,242,1064
1560 DATA 201,48,144,238,233,48,96,32,1040
1570 DATA 72,156,201,7,240,3,76,161,916
1580 DATA 148,160,6,162,0,32,176,4,688
1590 DATA 157,213,23,232,136,16,246,160,1183
1600 DATA 6,162,6,185,213,23,221,166,982
1610 DATA 22,240,6,202,16,248,76,161,971
1620 DATA 148,136,16,237,96,201,254,240,1328
1630 DATA 3,76,161,148,32,115,4,201,740
1640 DATA 149,144,246,201,153,176,242,56,1367
1650 DATA 233,149,10,170,189,173,22,141,1087
1660 DATA 236,19,189,174,22,141,238,19,1038
1670 DATA 76,115,4,169,0,141,211,23,739
1680 DATA 141,212,23,141,221,23,169,208,1138
1690 DATA 141,228,2,169,62,141,215,18,976
1700 DATA 169,41,141,236,19,169,189,141,1105
1710 DATA 238,19,162,6,189,166,22,157,959
1720 DATA 213,23,202,16,247,96,32,132,961
1730 DATA 157,142,211,23,96,201,254,240,1324
1740 DATA 3,76,161,148,32,115,4,201,740
1750 DATA 153,144,246,201,157,176,242,56,1375
1760 DATA 233,153,141,221,23,76,115,4,966
1770 DATA 32,132,157,134,208,173,211,23,1070
1780 DATA 41,2,74,24,101,208,201,40,691
1790 DATA 144,3,76,28,153,32,145,148,729
1800 DATA 32,132,157,134,209,173,211,23,1071
1810 DATA 41,1,24,101,209,201,25,176,778
1820 DATA 233,32,145,148,32,72,156,133,951
1830 DATA 20,160,0,132,21,32,176,4,545
1840 DATA 16,12,41,127,201,127,208,2,734
```

```
1850 DATA 169,94,9,64,208,10,201
,96,851
1860 DATA 144,4,41,223,208,2,41,
63,726
1870 DATA 133,212,169,0,133,213,
6,212,1078
1880 DATA 38,213,6,212,38,213,6,
212,938
1890 DATA 38,213,165,213,24,109,
228,2,992
1900 DATA 133,213,160,7,120,141,
62,255,1091
1910 DATA 177,212,153,222,23,136
,16,248,1187
1920 DATA 141,62,255,88,162,6,18
9,213,1116
1930 DATA 23,201,66,208,3,32,89,
20,642
1940 DATA 201,73,208,3,32,112,20
,201,850
1950 DATA 85,208,3,32,133,20,201
,82,764
1960 DATA 208,3,32,147,20,201,86
,208,905
1970 DATA 3,32,169,20,201,72,208
,3,708
1980 DATA 32,206,20,32,252,20,20
2,16,780
1990 DATA 205,32,111,19,32,173,1
9,165,756
2000 DATA 87,208,20,160,0,32,221
,19,747
2010 DATA 32,44,21,230,21,164,21
,196,729
2020 DATA 20,240,3,76,158,18,96,
160,771
2030 DATA 0,32,221,19,70,87,144,
34,607
2040 DATA 230,208,160,16,32,221,
19,198,1084
2050 DATA 208,70,87,144,18,230,2
09,160,1126
2060 DATA 8,32,221,19,230,208,16
0,24,902
2070 DATA 32,221,19,198,208,198,
209,76,1161
2080 DATA 41,19,230,209,160,8,32
,221,920
2090 DATA 19,198,209,76,41,19,17
3,211,946
2100 DATA 23,41,2,133,87,208,1,9
6,591
2110 DATA 198,87,160,7,162,4,185
,222,1025
2120 DATA 23,10,8,38,11,40,38,11
,179
2130 DATA 202,208,246,185,222,23
,170,165,1421
2140 DATA 11,153,222,23,138,162,
4,74,787
2150 DATA 8,102,11,40,102,11,202
,208,684
2160 DATA 246,165,11,153,238,23,
136,16,988
2170 DATA 211,166,87,96,173,211,
23,41,1008
2180 DATA 1,208,1,96,230,87,230,
87,940
2190 DATA 160,15,162,7,189,222,2
3,153,931
2200 DATA 222,23,189,238,23,153,
238,23,1109
2210 DATA 136,189,222,23,153,222
,23,189,1157
2220 DATA 238,23,153,238,23,136,
202,16,1029
2230 DATA 227,166,87,96,132,88,3
2,248,1076
2240 DATA 19,165,88,24,105,7,170
,160,738
2250 DATA 7,177,210,41,255,29,22
2,23,964
2260 DATA 145,210,202,136,16,243
,96,165,1213
2270 DATA 209,10,170,189,181,22,
133,210,1124
2280 DATA 189,182,22,133,211,164
,208,173,1282
2290 DATA 21,255,41,112,133,11,1
73,59,805
2300 DATA 5,41,112,74,74,74,74,5
,459
2310 DATA 11,145,210,165,211,24,
105,4,875
2320 DATA 133,211,173,59,5,10,10
,10,611
2330 DATA 10,133,11,173,21,255,4
1,15,659
2340 DATA 5,11,145,210,165,209,1
0,170,925
2350 DATA 189,231,22,133,210,189
,232,22,1228
2360 DATA 133,211,165,208,10,10,
10,170,917
2370 DATA 169,0,101,211,133,211,
138,101,1064
2380 DATA 210,133,210,144,2,230,
211,96,1236
2390 DATA 173,211,23,10,176,1,96
,160,850
2400 DATA 7,185,222,23,74,25,222
,23,781
2410 DATA 153,222,23,136,16,243,
96,173,1062
2420 DATA 211,23,41,64,208.1.96.
134,778
2430 DATA 11,162,3,94,222,23,202
,16,733
2440 DATA 250,166,11,96,173,211,
23,41,971
2450 DATA 32,208,1,96,169,255,14
1,229,1131
2460 DATA 23,96,173,211,23,41,16
,208,791
2470 DATA 1,96,160,7,185,222,23,
73,767
2480 DATA 255,153,222,23,136,16,
245,96,1146
2490 DATA 173,211,23,41,8,208,1,
96,761
2500 DATA 134,11,160,3,162,4,185
,222,881
2510 DATA 23,133,88,189,222,23,1
53,222,1053
2520 DATA 23,165,88,157,222,23,2
32,136,1046
2530 DATA 16,236,166,11,96,173,2
11,23,932
2540 DATA 41,4,208,1,96,160,7,18
5,702
2550 DATA 222,23,10,102,11,10,10
2,11,491
2560 DATA 10,102,11,10,102,11,10
,102,358
2570 DATA 11,10,102,11,10,102,11
,10,267
2580 DATA 102,11,165,11,153,222,
23,136,823
2590 DATA 16,221,96,173,212,23,2
08,1,950
2600 DATA 96,134,88,133,11,160,7
,185,814
2610 DATA 222,23,153,230,23,136,
16,247,1050
2620 DATA 162,8,160,7,185,222,23
,30,797
2630 DATA 229,23,106,153,222,23,
136,16,908
2640 DATA 243,202,208,238,198,11
,208,221,1529
2650 DATA 166,88,96,173,221,23,2
08,49,1024
2660 DATA 173,211,23,41,2,74,133
,11,668
2670 DATA 24,105,1,101,208,133,2
08,101,881
2680 DATA 11,201,40,176,1,96,169
,0,694
2690 DATA 133,208,173,211,23,41,
1,133,923
2700 DATA 11,24,105,1,101,209,13
3,209,793
2710 DATA 101,11,201,25,144,2,10
4,104,692
2720 DATA 96,201,1,208,54,173,21
1,23,967
2730 DATA 41,2,74,133,11,24,105,
1,391
2740 DATA 133,88,165,208,56,229,
88,133,1100
2750 DATA 208,48,1,96,169,40,56,
229,847
2760 DATA 88,133,208,173,211,23,
41,1,878
2770 DATA 133,11,24,105,1,133,88
,165,660
2780 DATA 209,56,229,88,133,209,
16,2,942
2790 DATA 104,104,96,201,2,240,2
28,76,1051
2800 DATA 75,21,169,25,160,23,32
,136,641
2810 DATA 144,160,0,185,215,21,2
40,33,998
2820 DATA 72,41,127,32,75,236,10
4,200,887
2830 DATA 41,128,240,239,173,232
,7,74,1134
2840 DATA 197,202,144,5,133,202,
76,172,1131
2850 DATA 21,169,13,32,75,236,76
,172,794
2860 DATA 21,169,13,76,75,236,66
,79,735
2870 DATA 76,196,73,84,65,76,73,
195,838
2880 DATA 85,78,68,69,82,76,73,7
8,609
2890 DATA 197,82,69,86,69,82,83,
197,865
2900 DATA 86,84,70,76,73,208,72,
90,759
2910 DATA 70,76,73,208,84,85,82,
206,884
2920 DATA 87,73,68,84,200,72,69,
73,726
2930 DATA 71,72,212,85,80,80,69,
82,751
2940 DATA 67,65,83,197,76,79,87,
69,723
2950 DATA 82,67,65,83,197,67,66,
77,704
2960 DATA 70,79,78,212,82,65,77,
70,733
2970 DATA 79,78,212,79,82,68,69,
210,877
2980 DATA 77,79,68,197,83,84,65,
78,731
2990 DATA 68,65,82,196,69,70,70,
69,689
3000 DATA 67,212,77,79,86,73,78,
199,871
3010 DATA 84,69,88,212,70,88,72,
69,752
3020 DATA 76,208,79,70,198,83,84
,79,877
3030 DATA 82,197,80,76,79,212,69
,82,877
3040 DATA 65,83,197,73,78,86,69,
82,733
3050 DATA 212,77,82,73,71,72,212
,77,876
3060 DATA 76,69,70,212,77,85,208
,77,874
3070 DATA 68,79,87,206,0,212,16,
228,896
3080 DATA 16,239,16,251,16,8,17,
22,585
3090 DATA 17,72,17,36,17,55,17,8
6,317
3100 DATA 17,92,17,98,17,106,17,
199,563
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3110 DATA 17,245,17,27,18,70,18,
77,489
3120 DATA 18,104,18,162,21,82,84
,72,561
3130 DATA 86,85,73,66,41,189,41,
29,610
3140 DATA 73,61,41,93,0,24,40,24
,356
3150 DATA 80,24,120,24,160,24,20
0,24,656
3160 DATA 240,24,24,25,64,25,104
,25,531
3170 DATA 144,25,184,25,224,25,8
,26,661
3180 DATA 48,26,88,26,128,26,168
,26,536
3190 DATA 208,26,248,26,32,27,72
,27,666
3200 DATA 112,27,152,27,192,27,0
,32,569
3210 DATA 64,33,128,34,192,35,0,
37,523
3220 DATA 64,38,128,39,192,40,0,
42,543
3230 DATA 64,43,128,44,192,45,0,
47,563
3240 DATA 64,48,128,49,192,50,0,
52,583
3250 DATA 64,53,128,54,192,55,0,
57,603
3260 DATA 64,58,128,59,192,60,0,
62,623
3270 DATA 13,80,82,73,78,84,70,8
8,568
3280 DATA 32,67,79,77,77,65,78,6
8,543
3290 DATA 83,32,38,32,75,69,89,8
7,505
3300 DATA 79,82,68,83,13,163,163
,163,814
3310 DATA 163,163,163,163,163,16
3,163,163,1304
3320 DATA 163,163,163,163,163,16
3,163,163,1304
3330 DATA 163,163,163,163,163,16
3,163,163,1304
3340 DATA 13,0,18,32,32,32,32,32
,191
3350 DATA 32,32,32,32,32,32,32,3
2,256
3360 DATA 32,32,32,32,32,32,32,3
2,256
3370 DATA 32,32,32,32,32,32,32,3
2,256
3380 DATA 32,32,32,32,32,32,32,3
2,256
3390 DATA 32,32,32,32,31,32,80,8
2,353
3400 DATA 73,78,84,70,88,32,43,5
2,520
3410 DATA 32,144,32,32,40,67,41,
32,420
3420 DATA 77,46,82,32,69,86,69,8
2,543
3430 DATA 73,78,71,72,65,77,32,4
9,517
3440 DATA 50,47,56,56,32,32,32,3
2,337
3450 DATA 32,32,32,32,32,32,32,3
2,256
3460 DATA 32,32,32,32,32,32,32,3
2,256
3470 DATA 32,32,32,32,32,32,32,3
2,256
3480 DATA 32,32,32,32,32,32,32,3
2,256
3490 DATA 32,32,32,32,32,13,13,2
7,213
3500 DATA 84,0,0,0,46,46,46,46,2
68
3510 DATA 46,46,46,32,0,0,0,0,17
0
3520 DATA 0,0,0,0,0,0,0,0,0
3530 DATA 0,0,0,0,0,0,0,0,0
3540 DATA 0,0,0,0,0,0,0,0,0
3550 DATA 0,0,0,0,0,95,95,241,43
1
```

PRINTFX S.EDITOR

```
10 REM ***************************
****
20 REM *
   *
30 REM *   PRINTFX SCREEN EDITOR
   *
40 REM *
   *
50 REM * (LOAD & RUN PRINTFX FIR
ST *
60 REM *
   *
70 REM ***************************
****
80 REM
90 LIST 4,1,0:LIST 0,1,0:LIST 1,
2
100 WAIT 1,1
110 =REM:=LET 1
120 LIST 1,7,5:=WAIT 7,9,"THE PR
INTFX SCREEN EDITOR"
130 LIST 1,8,5:=WAIT 3,12,"(C) C
OPYRIGHT 1988 M.R EVERINGHAM"
140 LIST 1,2:VERIFY 1,0,64,319,1
17:REM 8
150 / 1,"■":/ 2,"■":/ 3,"■":/ 4,
"■":/ 5,"■":/ 6,"■"
160 / 7,"■MY NAME IS SOCRATES■"+
CHR$(13)
170 / 8,"■WILL HIS EGO KNOW NO B
OUNDS?■"+CHR$(13)
180 FOR T=1 TO 200:IF T/50=INT(T
/50) THEN RETURN 1,800,3
190 NEXT T:CLR
200 X=0:Y=0:E=0:W=1:H=1:T=0:U=-1
210 =STOP E:=RETURN =PRINT#:=DAT
A ON:=WAIT X,Y," "
220 OPEN:GET K$:CLOSE OR K$:K=AS
C(K$)
230 IF K<32 OR LET("■■■■■■",K$) T
HEN 270
240 =STOP E:=RETURN =VERIFY:=DIM
 T:=WAIT X,Y,K$
250 IF (X<>40-W OR Y<>25-H) THEN
 X=X+W:IF X+W>40 THEN X=0:Y=Y+H
260 GOTO 210
270 =WAIT X,Y," ":=STOP E:=RETUR
N =VERIFY
280 IF K=13 AND Y+H<=25-H THEN X
=0:Y=Y+H
290 IF K=20 THEN 460
300 IF K$="■" THEN E=(E AND 127)
 OR 128-(E AND 128)
310 IF K$="■" THEN E=(E AND 191)
 OR 64-(E AND 64)
320 IF K$="■" THEN E=(E AND 223)
 OR 32-(E AND 32)
330 IF K$="■" THEN E=(E AND 239)
 OR 16-(E AND 16)
340 IF K$="■" THEN E=(E AND 247)
 OR 8-(E AND 8)
350 IF K$="■" THEN E=(E AND 251)
 OR 4-(E AND 4)
360 IF K$="■" AND X<>39 THEN E=(
E AND 253)OR 2-(E AND 2):W=3-W
370 IF K$="■" AND Y<>24 THEN E=(
E AND 254)OR 1-(E AND 1):H=3-H
380 IF K$="■" THEN T=(T+1) AND 3
390 IF K$="■" THEN U=-U:IF U<0 T
HEN =GOTO:GOTO IF K$="■" THEN =R
UN
400 IF K$="■" THEN E=0:U=-1:W=1:
H=1:T=0:=GOTO
410 IF K$="■" OR K$="■" THEN X=0
:Y=0:IF K$="■" THEN CLR
420 X=X-W*(K$="■" AND X+W<=40-W)
+W*(K$="■" AND X=>W)
430 Y=Y-H*(K$="■" AND Y+H<=25-H)
+H*(K$="■" AND Y=>H)
440 IF K=27 THEN 490
450 GOTO 210
460 =WAIT X,Y," "
470 IF X<>0 OR Y<>0 THEN X=X-W:I
F X<0 THEN X=40-W:Y=Y-H
480 =WAIT X,Y," ":GOTO 210
490 WAIT 0:PRINT CHR$(27)"NPRINT
FX SCREEN EDITOR ABORTED"
500 END
```

Banker 128

PROGRAM: BANKER LOADER

```
1 COLOR6,1:FAST:PRINT"[CLEAR]"
2 PRINT"[WHITE][UP]  [c L][c U][
c U][c U][c B]        [RVSON][c K]
[RVSOFF][c K]"
3 PRINT"  [c L]   [RVSON][c B][R
VSOFF]       [RVSON][c K][RVSOFF]
[c K]"
4 PRINT"  [c L][c Y][c Y][c Y][c
 B] [RVSON][c B][c F][RVSOFF] [R
VSON][c D][c F][c K][c C][c B][R
VSOFF] [RVSON][c D][c F][c K][c
B][RVSOFF][c V]"
5 PRINT"  [c L][c I][c I][c I][R
VSON][c B][RVSOFF][c I][c B][RVS
ON][c V][c B][RVSOFF][c K][RVSON
][c K][RVSOFF][RVSON][c V][RVSOF
F][c K][c B][RVSON][c B][RVSOFF]
[c B][c O][RVSON][c B][RVSOFF][c
 O] . . . . . . . . . . . "
6 PRINT
7 PRINT"       [RVSON][c 8][s U][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s I]"
8 PRINT"       [RVSON][c 8][s -][
s O][c Y][c Y][c Y][c Y][c Y][c
Y][c Y][s P] \50 CHEQUE      [s
O][c Y][c Y][c Y][c Y][c Y][c Y]
[c Y][s P][s -]""
9 PRINT"       [RVSON][c 8][s -][
c G][s V][YELLOW][s U][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s I]"
10 PRINT"       [RVSON][c 8][s -]
[s L][c P][YELLOW][s -][s O][c Y
][c Y][c Y][c Y][c Y][c Y][c Y][
s P] \50 CHEQUE CARD  [s O][c Y]
[c Y][c Y][c Y][c Y][c Y][c Y][s
 P][s -]"
11 PRINT"       [RVSON][c 8][s -]
[c +][c +][YELLOW][s -][c H]MYBA
NK.[c M]     MYBANK PLC    [c H][
s N][s M][s N][s M][s N][s M][s
N][c M][s -]"
12 PRINT"       [RVSON][c 8][s -]
[c +][c +][YELLOW][s -][s L][c P
][c P][c P][c P][c P][c P][c P][
s @]          MYTOWN   [s L][c P]
[c P][c P][c P][c P][c P][c P][s
 @][s -]"
13 PRINT"       [RVSuN][c 8][s -]
[c +]S[YELLOW][s -][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
```

```
[c +][c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][s -]"
14 PRINT"        [RVSON][c 8][s -]
[c +][c +][YELLOW][s -][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +][c +][c +
][c +][c +][s -]"
15 PRINT"        [RVSON][c 8][s -]
MR[YELLOW][s -][c +]SIGNATURE"CH
R$(14)"  F.BLOGGS.           "C
HR$(142)" [c +][c +][s -]"
16 PRINT"        [RVSON][c 8][s -]
15[YELLOW][s -][c +][c +][c +][c
 +][c +][c +][c +][c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +][c +][c
 +][s -]"
17 PRINT"        [RVSON][c 8][s J]
[s *][s *][YELLOW][s -]MR F BLOG
GS                          [s -]
"
18 PRINT"           [RVSON][s -]20
 10 20      91 K 44 FE 2  JAN 88
  [s -]"
19 PRINT"             [RVSON][s J][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s K]"
20 PRINT
21 PRINTCHR$(15)TAB(42)"   [RVSO
N][c B][RVSOFF][c B] [c L]
    [RVSON] [RVSOFF]           [R
VSON] [RVSOFF] [c X]           "
22 PRINTCHR$(15)TAB(42)"  [c L][
c K][c L][c H][c L] [RVSON][c B]
[RVSOFF][c B] [c J]  [c L]  [RVS
ON] [RVSOFF]  [RVSON][c B][RVSOF
F][c B] [RVSON][c B][RVSOFF][c U
][c K][RVSON][c B][RVSOFF][c Y][
RVSON] [RVSOFF] [c K][c L][c B][
c K][c L][c U][c U][c K]"
23 PRINTCHR$(15)TAB(22)" . . . .
 . . . . . . . .[c L][c K] [c B][R
VSON][c B][RVSOFF] [c B][RVSON][
c B][RVSOFF] [c B][RVSON][c B][R
VSOFF][c B][RVSON][c B][RVSOFF]
 [RVSON] [RVSOFF][c I] [c B][RVS
ON][c B][RVSOFF] [c B][c I][c B]
[c B][c I][c B][RVSON][c B][RVSO
FF][c B][RVSON][c B][RVSOFF] [c
B][RVSON][c B][RVSOFF][c B][c I]
[c K]"
24 PRINTCHR$(15)TAB(42)"
                               [c
K]    "
25 PRINTCHR$(15)TAB(42)"
                          [c U][c
 U][c U][c U]    "
27 FAST
28 RUN"BANKER"
```

Banker Main

BANKER MAIN

```
1 C=1:P=1:S=1:Z=1:X=2:V=0
2 FAST:GOSUB1006
3 GOSUB806:PRINTCHR$(142)
4 C=1:P=1:Z=1:X=2:P2$(2)="NO"
5 FAST:  REM OUTLINE
6 PRINT"[CLEAR]":SOUND1,5500,11
7 PRINT"[WHITE][UP]";XX$(3):PRIN
T"[DOWN][RED]";XX$(2);"[RIGHT][R
IGHT][RIGHT][RIGHT]ACCOUNT OF ";
XX$(1):PRINTCHR$(2)"[WHITE][DOWN
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT]MASTER MENU
      BANKER."
8 IFV=0THEN10
9 PRINTCHR$(2)CHR$(15)"[HOME][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][WHITE]FILES IN MEMORY.[DOWN][D
OWN][DOWN][DOWN]"
10 PRINT"[DOWN][WHITE][c A][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][c R][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][c R][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][c S]"
11 PRINT"[s -] 1.[c 8]CHEQUES[WH
ITE]        [s -] 2.[c 8]CASHPOI
NT [WHITE]  [s -] 3.[c 8]OTHERS[
WHITE]    [s -]"
12 PRINT"[c Q][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s +][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s +][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][c
 W]"
13 PRINT"[s -] 4.[c 8]BANK ORDER
S [WHITE]   [s -] 5.[c 8]PAYMENT
S [WHITE]   [s -] 6.[c 8]TOTALS
[WHITE]   [s -]"
14 PRINT"[c Z][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][c E][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][c E][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][c
 X]"
15 PRINT"[DOWN][c A][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][c R][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][c S]"
16 PRINT"[s -] 7.[c 8]SAVE TO DI
SK[WHITE]          [s -] 8.[c 8]U
PDATE FILES[WHITE]          [s -]"
17 PRINT"[c Z][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][c E][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][c
 X]"
18 PRINT"[c A][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][c R][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][c
 S]"
19 PRINT"[s -] 9.[c 8]CHANGE ENT
RY[WHITE]           [s -] 0.[c 8]P
RINTER OPTION[WHITE]        [s -]"
20 PRINT"[c Z][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][c E][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][c
 X]"
21 PRINT"[c A][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][c S]"
22 PRINT"[s -] A.[c 8]END OF RUN
. [WHITE]            [s -]"
23 PRINT"[c Z][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][c X]"
24 PRINT"[UP][UP][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] PLEASE CHOOSE. "
25 IFXX(1)=0THEN PRINTCHR$(15)"[
DOWN][UP][UP][UP][UP][UP][UP][UP
][UP][UP][UP]*********** PLEASE
WAIT LOADING FILES ************"
26 IFXX(1)=0THENGOSUB1222:PRINT"
[UP]
                            "
27 IFXX(1)=0THENPRINTCHR$(2)CHR$
(15)"[HOME][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][WHITE]FILES IN M
EMORY.":XX(1)=1:V=1
28 GETA$:IFA$=""THEN28
29 IFA$="1"THEN41
30 IFA$="2"THEN101
31 IFA$="3"THEN210
32 IFA$="4"THEN151
33 IFA$="5"THEN279
34 IFA$="6"THEN264
35 IFA$="7"THEN337
36 IFA$="8"THEN835
37 IFA$="9"THEN426
38 IFA$="0"THEN584
39 IFA$="A"THEN825
40 GOTO28
41 PRINT"[CLEAR][DOWN][DOWN][DOW
N][DOWN][YELLOW][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RVSON]
 ":SOUND1,8500,11
42 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON]  [RVSOFF]CHEQUES.[RVSO
N]                 "
43 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON] [c N][c 8][s O][c Y][c
 Y][c Y][c Y][c Y][c Y][c Y][c Y
][c Y][c Y][c Y][c Y][c Y][c Y][
c Y][c Y][c Y][c Y][c Y][s P][YE
```

```
LLOW][c H] "
44 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON] [c N][c 7]1.MAKE AN EN
TRY        [YELLOW][c H] "
45 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON] [c N][c 8]
          [YELLOW][c H] "
46 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON] [c N][c 7]2.VIEW ENTRI
ES        [YELLOW][c H] "
47 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON] [c N][c 8]
          [YELLOW][c H] "
48 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON] [c N][c 7]3.RETURN TO
MAIN MENU[YELLOW][c H] "
49 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON] [c N][c 8][s L][c P][c
 P][c P][c P][c P][c P][c P][c P
][c P][c P][c P][c P][c P][c P][
c P][c P][c P][c P][c P][s @][YE
LLOW][c H] "
50 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON]                [RVSOFF
]CHOOSE.[RVSON]   "
51 PRINT"[YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON]
  "
52 GETA$
53 IFA$="1"THEN57
54 IFA$="2"THEN80
55 IFA$="3"THEN5
56 GOTO52
57 PRINT"[CLEAR][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][c 7][RVSON]
ENTRY MODE  CHEQUES":SOUND1,8500
,11
58 PRINT"[DOWN][DOWN][c 8]INPUT
DETAILS;-"
59 PRINT"[DOWN]PRESS [WHITE]F1[c
 8] IN THE CHEQUE NUMBER MODE TO
 EXIT"
60 KEY 1,"NIL"+CHR$(13)
61 FORC=CTO500
62 PRINT"[HOME][DOWN][DOWN][DOWN
][DOWN][DOWN][DOWN][DOWN][DOWN][
DOWN][DOWN][DOWN][DOWN][DOWN][DO
WN][DOWN]
      "
63 PRINT"[DOWN]
             "
64 PRINT"[DOWN]
             "
65 PRINT"[DOWN]
66 FF$=CN$(C-1)
67 FF=VAL(FF$)
68 FP=FF+1
69 PRINT"[HOME][c 8][DOWN][DOWN]
[DOWN][DOWN][DOWN][DOWN][DOWN][D
OWN][DOWN][DOWN][DOWN][DOWN][DOW
N][DOWN][DOWN][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT]";FP
70 INPUT"[HOME][WHITE][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN][DOWN][DOWN][D
OWN][DOWN][DOWN]CHEQUE NUMBER[c
8]";CN$(C)
71 IFCN$(C)="NIL"THENCN$(C)="":G
OSUB 802:GOSUB393:GOTO80
72 GOSUB 796:PRINT"[DOWN][c 8]
    00.00.";X4$
73 INPUT"[UP][WHITE]DATE[c 8]";C
D$(C):V=1
74 GOSUB 796:PRINT"[DOWN][c 8][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT]00.00"
75 INPUT"[UP][WHITE]AMOUNT \[c 8
]";CA$(C)
76 GOSUB 796:PRINT"[DOWN][c 8]
    CASH"
77 INPUT"[UP][WHITE]ITEM[c 8]";C
I$(C):IFLEN(CI$(C))=>9THEN CI$(C
)=LEFT$(CI$(C),9)
78 GOSUB 798
79 NEXTC
80 PRINT"[CLEAR][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][c 7][RVSON]
[RIGHT]VIEW MODE   CHEQUES":SOUN
D1,8500,11
81 PRINT"[DOWN][DOWN][c 8][c A][
s *][s *][s *][s *][s *][s *][s
*][s *][c R][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][c R][s
 *][s *][s *][s *][s *][s *][s *
][s *][c R][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][c
S]"
82 GOSUB 800
83 PRINT"[s B]DATE.   [s B]ITEM.
    [s B]CHQ NO. [s B]AMOUNT
[s B]":GOSUB 800
84 PRINT"[c Z][s *][s *][s *][s
*][s *][s *][s *][s *][c E][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][c E][s *][s *][s *][s *
][s *][s *][s *][s *][c E][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][c X]":GOSUB 800
85 FORRC=1TOC-1
86 PRINT"[s B]          [s B]
    [s B]          [s B]
[s B]":GOSUB 800
87 PRINT"[UP][RIGHT]"CD$(RC)
88 PRINT"[UP][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT]"CI$(RC)
89 PRINT"[UP][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]"CN$(RC
)
90 CN(RC)=VAL(CA$(RC))
91 CT(RC)=CT(RC-1)+CN(RC)
92 PRINT"[UP][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT]\"CA$(RC
)
93 NEXTRC
94 PRINT"[c Z][s *][s *][s *][s
*][s *][s *][s *][s *][c E][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][c E][s *][s *][s *][s *
][s *][s *][s *][s *][c E][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][c X]"
95 PRINT"[RVSON][DOWN][DOWN][DOW
N]

                     "
96 GOSUB 804:PRINT"[RVSON][UP][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT]  TO
TAL";
97 CT(RC)=CT(RC-1)
98 PRINT"[RVSON]     \";CT(RC)"[L
EFT]  "
99 GETKEYA$
100 GOTO5
101 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON]
   ":SOUND1,8500,11
102 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON]  [RVSOFF]CASHPOINT.[R
VSON]            "
103 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8][s O][c Y][
c Y][c Y][c Y][c Y][c Y][c Y][c
Y][c Y][c Y][c Y][c Y][c Y][c Y]
[c Y][c Y][c Y][c Y][c Y][s P][Y
ELLOW][c H] "
104 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]1.MAKE AN E
NTRY       [YELLOW][c H] "
105 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8]
           [YELLOW][c H] "
106 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]2.VIEW ENTR
IES        [YELLOW][c H] "
107 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8]
           [YELLOW][c H] "
108 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]3.RETURN TO
 MAIN MENU[YELLOW][c H] "
109 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8][s L][c P][
c P][c P][c P][c P][c P][c P][c
P][c P][c P][c P][c P][c P][c P]
[c P][c P][c P][c P][c P][s @][Y
ELLOW][c H] "
110 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON]               [RVSOF
F]CHOOSE.[RVSON]   "
111 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON]
   "
112 GETA$
113 IFA$="1"THEN117
114 IFA$="2"THEN131
115 IFA$="3"THEN5
116 GOTO112
117 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][DOWN][DOWN][c 7][RVSON
]ENTRY MODE  CASHPOINT":SOUND1,8
500,11
118 PRINT"[DOWN][DOWN][YELLOW]IN
PUT DETAILS;-"
119 PRINT"[DOWN]PRESS [WHITE]F1[
c 8] IN THE BRANCH MODE TO EXIT"
:KEY1,"    "+CHR$(13)
120 FORP=PTO500
121 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN][DOWN][DOWN][D
OWN][DOWN]
      "
122 PRINT"[DOWN]
             "
123 PRINT"[DOWN]
             "
124 PRINT"[DOWN]
             "
125 PRINT"[c 8][WHITE][HOME][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN][DOWN][DOWN][D
OWN][DOWN][DOWN][DOWN]BRANCH   [
c 8]NIL":INPUT"[UP][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT]";PN$(P):IFLEN(PN$(P))=>9THE
N PN$(P)=LEFT$(PN$(P),9)
126 IFPN$(P)=""THENGOSUB 802:GOS
UB399:GOTO131
127 GOSUB 796:PRINT"[DOWN][WHITE
]DATE      [c 8]00.00.";X4$:INPUT
"[UP][RIGHT][RIGHT][RIGHT][RIGHT
```

```
][RIGHT][RIGHT][RIGHT]";PD$(P):V
=1
128 GOSUB 796:PRINT"[DOWN][WHITE
]AMOUNT  [c 8]00.00":INPUT"[UP][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT]";PA$(P)
129 GOSUB 798
130 NEXTP
131 PRINT"[CLEAR][c 7][RVSON][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][RIGHT]VIEW MODE   CASHPOINT":S
OUND1,8500,11
132 PRINT"[DOWN][DOWN][c 8][c A]
[s *][s *][s *][s *][s *][s *][s
 *][s *][c R][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][c R][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][c
 S]"
133 GOSUB 800
134 PRINT"[s B]DATE.  [s B]BRAN
CH          [s B]AMOUNT    [s
B]":GOSUB 800
135 PRINT"[c Z][s *][s *][s *][s
 *][s *][s *][s *][s *][c E][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][c E][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][c X]":GOSUB 800
136 FORRP=1TOP-1
137 PRINT"[s B]        [s B]
          [s B]           [s
B]":GOSUB 800
138 PRINT"[UP][RIGHT]"PD$(RP)
139 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT]"PN$(RP)
140 PN(RP)=VAL(PA$(RP))
141 PT(RP)=PT(RP-1)+PN(RP)
142 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]"PA$(RP
)
143 NEXTRP
144 PRINT"[c Z][s *][s *][s *][s
 *][s *][s *][s *][s *][c E][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][c E][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][c X]"
145 PRINT"[RVSON][DOWN][DOWN][DO
WN]


                           "
146 GOSUB 804:PRINT"[RVSON][UP][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT]  T
OTAL";
147 PT(RP)=PT(RP-1):PRINT"     \"
;PT(RP)"[LEFT]  "
148 GETKEYA$
149 GOTOS
150 END
151 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON]
       ":SOUND1,8500,11
152 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON]  [RVSOFF]STANDING ORD
ERS.[RVSON]          "
153 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8][s O][c Y][
c Y][c Y][c Y][c Y][c Y][c Y][c
Y][c Y][c Y][c Y][c Y][c Y][c Y]
[c Y][c Y][c Y][c Y][c Y][c Y][c
 Y][c Y][c Y][s P][YELLOW][c H]
"
154 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]1.VIEW TOTA
LS (YEARLY)   [YELLOW][c H] "
155 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8]
             [YELLOW][c H] "
156 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]2.VIEW MONT
HLY PAYMENTS  [YELLOW][c H] "
157 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8]
             [YELLOW][c H] "
158 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]3.RETURN TO
 MAIN MENU    [YELLOW][c H] "
159 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8][s L][c P][
c P][c P][c P][c P][c P][c P][c
P][c P][c P][c P][c P][c P][c P]
[c P][c P][c P][c P][c P][c P][c
 P][c P][c P][s @][YELLOW][c H]
"
160 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON]                    [R
VSOFF]CHOOSE.[RVSON]   "
161 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON]
              "

162 GETA$
163 IFA$="1"THENGOSUB1182:GOTO15
1
164 IFA$="2"THEN167
165 IFA$="3"THENS
166 GOTO162
167 GOSUB1301:PRINT"[HOME][c 7][
RVSON][DOWN][DOWN][DOWN][DOWN][D
OWN][DOWN][RIGHT]VIEW MODE   STA
NDING ORDERS":SOUND1,8500,11
168 P2$(2)="YES"
169 C7$=MID$(XX$(3),4,2)
170 C8$=RIGHT$(XX$(3),2)
171 C7=VAL(C7$):C8=VAL(C8$)
172 IFC8=<C10(1)ANDC7<C9(1)THEN
GOTO 1273
173 GOSUB1349
174 IFG=OTHEN 177
175 IFC10(G)=>C8ANDC9(G)=>C7 THE
N1362
176 C10(T+1)=C10(T):C9(T+1)=C9(T
)+1:IFC9(T+1)=>13THENC9(T+1)=1:C
10(T+1)=C10(T)+1
177 T=1
178 IFC9(T)=OTHENC9(T)=C7
179 IFC10(T)=OTHENC10(T)=C8
180 GOSUB 800
181 T=G:FORRG=GTO50
182 FORA=1TOB(DD)
183 T=T+1
184 F=DD
185 Q1$(T)=C1$(A,F):Q2$(T)=C2$(A
,F)
186 IFD$(A,F)="S"THEN188
187 IFC9(T)=>LP(A,F)ANDC10(T)=>C
6(A,F)THENQ1$(T)="FINISHED":Q2$(
T)="00.00"
188 PRINT"[s B]        [s B]
          [s B]           [s
B]":GOSUB 800
189 PRINT"[UP][RIGHT]"C9(T);".";
C10(T)
190 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT]"Q1$(T)
191 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]"Q2$(T)
192 Q2(T)=VAL(Q2$(T))
193 ST(T)=ST(T-1)+Q2(T)
194 C10(T+1)=C10(T):C9(T+1)=C9(T
)
195 NEXTA
196 IFSS$="YES"THEN200
197 IFC9(T)=C7ANDC10(T)=C8THEN20
0
198 C10(T+1)=C10(T):C9(T+1)=C9(T
)+1:IFC9(T+1)=>13THENC9(T+1)=1:C
10(T+1)=C10(T)+1
199 NEXTRG
200 PRINT"[c Z][s *][s *][s *][s
 *][s *][s *][s *][s *][c E][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][c E][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][c X]"
201 PRINT"[RVSON][DOWN][DOWN][DO
WN]


                           "
202 GOSUB 804: PRINT"[RVSON][UP]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT] T
OTAL ";
203 A=A-1
204 G=T
205 PRINT"       ";ST(G)
206 C9(G+1)=0
207 FORA=G+1TOG+10
208 Q1$(A)="":Q2$(A)=""
209 NEXTA:GETKEYA$:GOTO151
210 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][YELLOW][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RVSON]
   ":SOUND1,8500,11
211 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON]  [RVSOFF]OTHERS.[RVSO
N]          "
212 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8][s O][c Y][
c Y][c Y][c Y][c Y][c Y][c Y][c
Y][c Y][c Y][c Y][c Y][c Y][c Y]
[c Y][c Y][c Y][c Y][c Y][s P][Y
ELLOW][c H] "
213 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]1.MAKE AN E
NTRY      [YELLOW][c H] "
214 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8]
             [YELLOW][c H] "
215 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]2.VIEW ENTR
IES       [YELLOW][c H] "
216 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8]
             [YELLOW][c H] "
217 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 7]3.RETURN TO
 MAIN MENU[YELLOW][c H] "
218 PRINT"[YELLOW][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RVSON] [c N][c 8][s L][c P][
c P][c P][c P][c P][c P][c P][c
P][c P][c P][c P][c P][c P][c P]
[c P][c P][c P][c P][c P][s @][Y
ELLOW][c H] "
```

```
219 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON]                    [RVSOFF]CHOOSE.[RVSON]   "
220 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON]
   "
221 GETA$
222 IFA$="1"THEN226
223 IFA$="2"THEN244
224 IFA$="3"THEN5
225 GOTO221
226 PRINT"[CLEAR][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][c 7][RVSON]ENTRY MODE  OTHERS":SOUND1,8500,11
227 PRINT"[DOWN][DOWN][c 8]INPUT DETAILS;-"
228 PRINT"[DOWN]PRESS [WHITE]F1[c 8] IN THE ITEM MODE TO EXIT"
229 KEY1,"NIL
"+CHR$(13)
230 FORZ=ZTO500
231 PRINT"[HOME][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]
     "
232 PRINT"[DOWN]
          "
233 PRINT"[DOWN]
          "
234 PRINT"[DOWN]
          "
235 PRINT"[HOME][c 8][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]      CHQ BOOK
"
236 INPUT"[HOME][WHITE][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]ITEM[c 8]";ZI$(Z):IFLEN(ZI$(Z))=>9THEN ZI$(Z)=LEFT$(ZI$(Z),9)
237 IFZI$(Z)="NIL"THENZI$(Z)="":GOSUB 802 :GOSUB405:GOTO244
238 GOSUB 796:PRINT"[DOWN][c 8]     00.00.";X4$
239 INPUT"[UP][WHITE]DATE[c 8]";ZD$(Z):V=1
240 GOSUB 796:PRINT"[DOWN][c 8]        00.00"
241 INPUT"[UP][WHITE]AMOUNT \[c 8]";ZA$(Z)
242 GOSUB 798
243 NEXTZ
244 PRINT"[CLEAR][c 7][RVSON][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][RIGHT]VIEW MODE   OTHERS":SOUND1,8500,11
245 PRINT"[DOWN][DOWN][c 8][c A][s *][s *][s *][s *][s *][s *][s *][s *][c R][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][c R][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][c S]"
246 GOSUB 800
247 PRINT"[s B]DATE.   [s B]ITEM            [s B]AMOUNT    [s B]":GOSUB 800
248 PRINT"[c Z][s *][s *][s *][s *][s *][s *][s *][s *][c E][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][c E][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][c X]":GOSUB 800
249 FORRZ=1TOZ-1
250 PRINT"[s B]          [s B]            [s B]          [s B]":GOSUB 800
251 PRINT"[UP][RIGHT]"ZD$(RZ)
252 PRINT"[UP][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT]"ZI$(RZ)
253 ZN(RZ)=VAL(ZA$(RZ))
254 ZT(RZ)=ZT(RZ-1)+ZN(RZ)
255 PRINT"[UP][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT]\"ZA$(RZ)
256 NEXTRZ
257 PRINT"[c Z][s *][s *][s *][s *][s *][s *][s *][s *][c E][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][c E][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][c X]"
258 PRINT"[RVSON][DOWN][DOWN][DOWN]


259 GOSUB 804: PRINT"[RVSON][UP][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT] TOTAL";
260 ZT(RZ)=ZT(RZ-1)
261 PRINT"    \";ZT(RZ)
262 GETKEYA$
263 GOTO5
264 PRINT"[CLEAR][DOWN][DOWN][c 8]TOTALS":SOUND1,8500,11
265 PRINT"[DOWN][DOWN]TOTAL MONIES SPENT":GOSUB 800
266 PRINT"[DOWN]CHEQUES     ";CT(RC) :GOSUB 800
267 PRINT"[DOWN]CASHPOINT  ";PT(RP) :GOSUB 800
268 PRINT"[DOWN]STAN ORDERS";ST(G) :GOSUB 800
269 PRINT"[DOWN]OTHERS      ";ZT(RZ)
270 TT=CT(RC)+PT(RP)
271 TT=TT+ST(G)+ZT(RZ)
272 PRINT"[DOWN]TOTAL EXPENDITURE  \"TT :GOSUB 800
273 PRINT"[DOWN]TOTAL INCOME
   \"XT(RX) :GOSUB 800
274 BT=XT(RX)-TT
275 PRINT"[RVSON][DOWN][DOWN]



          "
276 GOSUB 804: PRINT"[RVSON][UP]BALANCE           \"BT
277 GETKEYA$
278 GOTO5
279 PRINT"[CLEAR][DOWN][DOWN][DOWN][DOWN][YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON]
  ":SOUND1,8500,11
280 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON]  [RVSOFF]PAYMENTS INTO BANK.[RVSON]    "
281 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON] [c N][c 8][s O][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][c Y][s P][YELLOW][c H] "
282 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON] [c N][c 7]1.MAKE AN ENTRY      [YELLOW][c H] "
283 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON] [c N][c 8]
          [YELLOW][c H] "
284 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON] [c N][c 7]2.VIEW ENTRIES       [YELLOW][c H] "
285 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON] [c N][c 8]
          [YELLOW][c H] "
286 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON] [c N][c 7]3.RETURN TO MAIN MENU[YELLOW][c H] "
287 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON] [c N][c 8][s L][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][c P][s @][YELLOW][c H] "
288 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON]                    [RVSOFF]CHOOSE.[RVSON]   "
289 PRINT"[YELLOW][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RIGHT][RVSON]
   "
290 GETA$
291 IFA$="1"THEN295
292 IFA$="2"THEN313
293 IFA$="3"THEN5
294 GOTO290
295 PRINT"[CLEAR][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][c 7][RVSON]ENTRY MODE  PAYMENTS":SOUND1,8500,11
296 PRINT"[DOWN][DOWN][c 8]INPUT DETAILS;-"
297 PRINT"[DOWN]PRESS [WHITE]F1[c 8] IN THE ITEM MODE TO EXIT"
298 KEY 1,"NIL
 "+CHR$(13)
299 GOSUB848:FORX=XTO500
300 PRINT"[HOME][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]
301 PRINT"[DOWN]
          "
302 PRINT"[DOWN]
          "
303 PRINT"[DOWN]
          "
304 PRINT"[HOME][c 8][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]          PAY"
305 INPUT"[HOME][WHITE][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]ITEM   [c 8]";XI$(X):IFLEN(XI$(X))=>9 THEN XI$(X)=LEFT$(XI$(X),9)
306 IFXI$(X)="NIL"THENXI$(X)="":GOSUB 802:GOSUB417:GOTO313
307 GOSUB 796: PRINT"[DOWN][c 8]     00.00.";X4$
308 INPUT"[UP][WHITE]DATE[c 8]";XD$(X):V=1
309 GOSUB 796: PRINT"[DOWN][c 8]        00.00"
310 INPUT"[UP][WHITE]AMOUNT \[c 8]";XA$(X)
311 GOSUB 798
312 NEXTX
313 PRINT"[CLEAR][c 7][RVSON][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][RIGHT]VIEW MODE   PAYMENTS":SOUND1,8500,11
314 PRINT"[DOWN][DOWN][c 8][c A][s *][s *][s *][s *][s *][s *][s *][s *][c R][s *][s *][s *][s *][s *][s *][s *][s *][s *][s *][
```

```
s *][s *][s *][s *][s *][s *][s
*][s *][c R][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][c
 S]"
315 GOSUB 800
316 PRINT"[s B]DATE.   [s B]ITEM
.              [s B]AMOUNT    [s
B]":GOSUB 800
317 PRINT"[c Z][s *][s *][s *][s
 *][s *][s *][s *][s *][c E][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][c E][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][c X]":GOSUB 800
318 GOSUB848:FORRX=1TOX-1
319 PRINT"[s B]          [s B]
              [s B]            [s
B]":GOSUB 800
320 PRINT"[UP][RIGHT]"XD$(RX)
321 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT]"XI$(RX)
322 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]\"XA$(R
X)
323 XN(RX)=VAL(XA$(RX))
324 XT(RX)=XN(RX)+XT(RX-1)
325 NEXTRX
326 PRINT"[c Z][s *][s *][s *][s
 *][s *][s *][s *][s *][c E][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][c E][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][c X]"
327 GOSUB 800: PRINT"[DOWN][DOWN
][DOWN][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT]TOTAL INCOME
      \";
328 XT(RX)=XT(RX-1)
329 PRINTXT(RX)
330 GOSUB 800: PRINT"[DOWN][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT]TOTAL EXPENDITURE \";:GO
SUB423
331 PRINT;TT
332 PRINT"[DOWN][RVSON]



   "
333 GOSUB 804: PRINT"[UP][RVSON]
          BALANCE            \";
:BT=XT(RX)-TT
334 PRINT;BT
335 GETKEYA$
336 GOTO5
337 GOSUB 804: GOSUB 819
338 IFP2$(2)="NO"THEN1296
339 PRINTCHR$(15)"[HOME][DOWN][D
OWN][DOWN][DOWN][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN]*******************
*************** SAVING *********
*****************************"
340 GOSUB1281
341 X$=XX$(4)
342 OPEN5,8,5,"@0:"+X$+",S,W"
343 PRINT#5,Z:PRINT#5,XX$(5)
344 PRINT#5,P
345 PRINT#5,C
346 PRINT#5,X
347 PRINT#5,DD
348 PRINT#5,B(DD)
349 PRINT#5,XA$(1)
350 PRINT#5,RC
351 PRINT#5,CT(RC)
352 PRINT#5,RP
353 PRINT#5,PT(RP)
354 PRINT#5,RZ
355 PRINT#5,ZT(RZ)
356 F=00
357 PRINT#5,ST(G)
358 PRINT#5,RX
359 PRINT#5,XT(RX)
360 PRINT#5,TT
361 PRINT#5,BT
362 PRINT#5,G
363 FORA=1TO(C-1)
364 PRINT#5,CD$(A)
365 PRINT#5,CN$(A)
366 PRINT#5,CA$(A)
367 PRINT#5,CI$(A)
368 NEXTA
369 FORB=1TO(P-1)
370 PRINT#5,PD$(B)
371 PRINT#5,PN$(B)
372 PRINT#5,PA$(B)
373 NEXTB
374 FORB=1TO(Z-1)
375 PRINT#5,ZI$(B)
376 PRINT#5,ZD$(B)
377 PRINT#5,ZA$(B)
378 NEXTB
379 FORA=1TO(X-1)
380 PRINT#5,XI$(A)
381 PRINT#5,XD$(A)
382 PRINT#5,XA$(A)
383 NEXTA
384 FORGQ=1TOG
385 PRINT#5,C9(GQ)
386 PRINT#5,C10(GQ)
387 PRINT#5,Q1$(GQ)
388 PRINT#5,Q2$(GQ)
389 NEXTGQ
390 CLOSE5
391 PRINT"[CLEAR]"
392 GOTO5
393 FORRC=1TOC
394 CN(RC)=VAL(CA$(RC))
395 CT(RC)=CT(RC-1)+CN(RC)
396 NEXTRC
397 RC=RC-1
398 RETURN
399 FORRP=1TOP
400 PN(RP)=VAL(PA$(RP))
401 PT(RP)=PT(RP-1)+PN(RP)
402 NEXTRP
403 RP=RP-1
404 RETURN
405 FORRZ=1TOZ
406 ZN(RZ)=VAL(ZA$(RZ))
407 ZT(RZ)=ZT(RZ-1)+ZN(RZ)
408 NEXTRZ
409 RZ=RZ-1
410 RETURN
411 FORRS=1TO(S-1)
412 ST(RS)=S0+SC
413 ST(RS)=ST(RS)+ST(RS-1)
414 NEXTRS
415 RS=RS-1
416 RETURN
417 FORRX=1TOX
418 XN(RX)=VAL(XA$(RX))
419 XT(RX)=XT(RX-1)+XN(RX)
420 NEXTRX
421 RX=RX-1
422 RETURN
423 TT=CT(RC)+PT(RP)
424 TT=TT+ST(G)+ZT(RZ)
425 RETURN
426 GOSUB 800:GOSUB 800:GOSUB 80
0:GOSUB 800:     PRINT"[CLEAR][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][c 7][RVSON]CHANGE ENTRY

                             "
427 PRINT"[DOWN][DOWN][YELLOW]IN
PUT CATEGORY TO CHANGE"
428 PRINT"[DOWN][c 8]1. CHEQUES"
429 PRINT"2. CASHPOINT"
430 PRINT"3. OTHERS"
431 PRINT"4. PAYMENTS"
432 GETA$
433 IFA$="1"THEN438
434 IFA$="2"THEN476
435 IFA$="3"THEN512
436 IFA$="4"THEN548
437 GOTO432
438 GOSUB 796: PRINT"[CLEAR][c 7
][DOWN][DOWN][DOWN][DOWN][DOWN][
DOWN][RVSON]CHEQUES   CHANGE MOD
E
                      "
439 PRINT"[DOWN][YELLOW]'C'TO CH
ANGE          'R'RETURN TO MENU"
440 PRINT"'.'TO GO FORWARD"
441 PRINT"','TO GO BACK"
442 RC=1
443 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN]
                "
444 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN]
                     "
445 PRINT"
                  "
446 PRINT"
                  "
447 PRINT"
                  "
448 PRINT"
                  "
449 PRINT"
                  "
450 PRINT"
                  "
451 IFRC<1THENRC=1
452 IFRC>CTHENRC=C
453 PRINT"[HOME][c 8][DOWN][DOWN
][DOWN][DOWN][DOWN][DOWN][DOWN][
DOWN][DOWN][DOWN][DOWN][DOWN]ENT
RY NO.  ";RC
454 PRINT"[DOWN][DOWN]
                     "
455 PRINT"[UP]DATE    ITEM
  CHEQUE NO    AMOUNT"
456 PRINT"
                  "
457 PRINTCD$(RC)
458 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT]"CI$(RC)
459 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT]"CN$(R
C)
460 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT]"CA$(RC)
461 GETA$
462 IFA$="."THENRC=RC+1:GOTO443
463 IFA$=","THENRC=RC-1:GOTO443
464 IFA$="C"THEN467
465 IFA$="R"THEN5
466 GOTO461
467 INPUT"[DOWN]DATE";CD$(RC)
468 INPUT"ITEM";CI$(RC)
469 INPUT"CHEQUE NUMBER";CN$(RC)
470 INPUT"AMOUNT";CA$(RC)
471 PRINT"[UP][UP][UP][UP]
                 "
472 PRINT"
  "
473 PRINT"
  "
474 PRINT"
  "
475 GOTO443
476 GOSUB 795: PRINT"[CLEAR][DOW
```

```
N][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]
[RVSON][c 7]CASHPOINT     CHANGE
MODE
                                    "
477 PRINT"[DOWN][YELLOW]'C'TO CH
ANGE          'R'RETURN TO MENU"
478 PRINT"'.'TO GO FORWARD"
479 PRINT"','TO GO BACK"
480 RP=1
481 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN]
                         "
482 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN]
                                 "
483 PRINT"
                         "
484 PRINT"
                         "
485 PRINT"
                         "
486 PRINT"
                         "
487 PRINT"
                         "
488 PRINT"
                         "
489 IFRP<1THENRP=1
490 IFRP>PTHENRP=P
491 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN][DOWN][c 8]ENT
RY NO.  ";RP
492 PRINT"[DOWN][DOWN]
                                    "
493 PRINT"[UP]DATE      ITEM
                AMOUNT"
494 PRINT"
                         "
495 PRINTPD$(RP)
496 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT]"PN$(RP)
497 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT]"PA$(RP)
498 GETA$
499 IFA$="."THENRP=RP+1:GOTO482
500 IFA$=","THENRP=RP-1:GOTO482
501 IFA$="C"THEN504
502 IFA$="R"THENS
503 GOTO498
504 INPUT"[DOWN]DATE";PD$(RP)
505 INPUT"BRANCH";PN$(RP)
506 INPUT"AMOUNT";PA$(RP)
507 PRINT"[UP][UP][UP][UP]
                         "
508 PRINT"
  "
509 PRINT"

510 PRINT"
  "
511 GOTO482
512 GOSUB 796:PRINT"[CLEAR][DOWN
][DOWN][DOWN][DOWN][DOWN][DOWN][
c 7][RVSON]OTHERS     CHANGE MODE
513 PRINT"[DOWN][YELLOW]'C'TO CH
ANGE          'R'RETURN TO MENU"
514 PRINT"'.'TO GO FORWARD"
515 PRINT"','TO GO BACK"
516 RZ=1
517 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN]
                         "
518 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN]
                                    "
519 PRINT"
                         "
520 PRINT"
                         "
521 PRINT"
                         "
522 PRINT"
                         "
523 PRINT"
                         "
524 PRINT"
                         "
525 IFRZ<1THENRZ=1
526 IFRZ>ZTHENRZ=Z
527 PRINT"[HOME][c 8][DOWN][DOWN
][DOWN][DOWN][DOWN][DOWN][DOWN][
DOWN][DOWN][DOWN][DOWN][DOWN]ENT
RY NO.  ";RZ
528 PRINT"[DOWN][DOWN]
                                    "
529 PRINT"[UP]DATE      ITEM
                AMOUNT"
530 PRINT"
                         "
531 PRINTZD$(RZ)
532 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT]"ZI$(RZ)
533 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT]"ZA$(RZ)
534 GETA$
535 IFA$="."THENRZ=RZ+1:GOTO518
536 IFA$=","THENRZ=RZ-1:GOTO518
537 IFA$="C"THEN540
538 IFA$="R"THENS
539 GOTO534
540 INPUT"[DOWN]DATE";ZD$(RZ)
541 INPUT"BRANCH";ZI$(RZ)
542 INPUT"AMOUNT";ZA$(RZ)
543 PRINT"[UP][UP][UP][UP]
                         "
544 PRINT"
  "
545 PRINT"
  "
546 PRINT"
  "
547 GOTO518
548 GOSUB 796: PRINT"[CLEAR][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[RVSON][c 7]PAYMENTS      CHANGE
MODE
                                    "
549 PRINT"[DOWN][YELLOW]'C'TO CH
ANGE          'R'RETURN TO MENU"
550 PRINT"'.'TO GO FORWARD"
551 PRINT"','TO GO BACK"
552 RX=1
553 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN]
                         "
554 PRINT"[HOME][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][DOWN][DOWN]
[DOWN][DOWN][DOWN]
                                    "
555 PRINT"
                         "
556 PRINT"
                         "
557 PRINT"
                         "
558 PRINT"
                         "
559 PRINT"
                         "
560 PRINT"
                         "
561 IFRX<1THENRX=1
562 IFRX>XTHENRX=X
563 PRINT"[HOME][c 8][DOWN][DOWN
][DOWN][DOWN][DOWN][DOWN][DOWN][
DOWN][DOWN][DOWN][DOWN][DOWN]ENT
RY NO.  ";RX
564 PRINT"[DOWN][DOWN]
                                    "
565 PRINT"[UP]DATE      ITEM
                AMOUNT"
566 PRINT"
                         "
567 PRINTXD$(RX)
568 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT]"XI$(RX)
569 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT]"XA$(RX)
570 GETA$
571 IFA$="."THENRX=RX+1:GOTO554
572 IFA$=","THENRX=RX-1:GOTO554
573 IFA$="C"THEN576
574 IFA$="R"THENS
575 GOTO570
576 INPUT"[DOWN]DATE";XD$(RX)
577 INPUT"ITEM";XI$(RX)
578 INPUT"AMOUNT";XA$(RX)
579 PRINT"[UP][UP][UP][UP]
                         "
580 PRINT"
  "
581 PRINT"
  "
582 PRINT"
  "
583 GOTO554
584 GOSUB 800:GOSUB 800:GOSUB 80
0:GOSUB 800:PRINT"[CLEAR][DOWN][
RVSON]     PRINTER MODE

                                    "
585 PRINT"[DOWN][DOWN][DOWN][DOW
N]                              DO Y
OU WANT A PRINTOUT"
586 PRINT"[DOWN][DOWN][DOWN]
                                  (Y
/N)"
587 GETA$:IFA$="Y"GOTO590
588 IFA$="N"THENS
589 GOTO587
590 GOSUB 796:GOSUB 796:GOSUB 79
6:GOSUB 796: GOSUB 796
591 DD$=XX$(3)
592 GOSUB 800: PRINT"[CLEAR][DOW
N][DOWN]ENSURE PRINTER IS ON"
593 PRINTCHR$(15)"[DOWN][DOWN][D
OWN][DOWN][DOWN]
                     PRESS ANY KEY
"
594 GETKEYA$
595 GOSUB 796:GOSUB 796:GOSUB 79
6:GOSUB 800:     PRINTCHR$(15)"[C
LEAR][DOWN][DOWN][DOWN][DOWN][DO
WN][DOWN][DOWN]
                       PRINTING"
596 OPEN1,4 :GOSUB2030
597 PRINT#1,CHR$(15);XX$(2)"
                       ACCOUNT OF "
XX$(1)
598 PRINT#1," "
599 PRINT#1,"CORRECT AS OF  ";DD
$:GOSUB2035
600 PRINT#1,CHR$(14)"BANK STATEM
ENT"
601 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *]"
602 PRINT#1,CHR$(15)"[s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
```

```
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *]"
603 PRINT#1,"DATE          ITEM
        CHEQUE NO.
 DEBIT      CREDIT     "
604 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *]"
605 PRINT#1,"CHEQUES"
606 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *]"
607 FORRC=1TOC-1
608 GOSUB677
609 PRINT#1,CD$(RC);
610 GOSUB688
611 PRINT#1,CI$(RC);
612 GOSUB699
613 PRINT#1,CN$(RC);
614 PRINT#1,CA$(RC)
615 NEXTRC
616 PRINT#1," "
617 PRINT#1,"CASHPOINT"
618 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *]"
619 FORRP=1TOP-1
620 GOSUB710
621 PRINT#1,PD$(RP);
622 GOSUB721
623 PRINT#1,PN$(RP);
624 PRINT#1,PA$(RP)
625 NEXTRP
626 PRINT#1," "
627 PRINT#1,"OTHERS"
628 PRINT#1,"[s *][s *][s *][s *
][s *][s *]"
629 FORRZ=1TOZ-1
630 GOSUB732
631 PRINT#1,ZD$(RZ);
632 GOSUB743
633 PRINT#1,ZI$(RZ);
634 PRINT#1,ZA$(RZ)
635 NEXTRZ
636 PRINT#1," "
637 PRINT#1,"STANDING ORDERS"
638 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *]"
639 FORRS=1TOG
640 GOSUB754
641 PRINT#1,C9(RS);
642 PRINT#1,C10(RS);"        ";
643 PRINT#1,Q1$(RS);"
                      ";
644 PRINT#1,Q2$(RS)
645 NEXTRS
646 PRINT#1," "
647 PRINT#1,"PAYMENTS TO BANK"
648 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *]"
649 FORRX=1TOX-1
650 GOSUB765
651 PRINT#1,XD$(RX);
652 GOSUB776
653 PRINT#1,XI$(RX);
654 PRINT#1,XA$(RX)
655 NEXTRX
656 PRINT#1," "
657 GOSUB787
658 PRINT#1,"TOTALS.

 ";TT$;
659 PRINT#1,XT(RX)
660 PRINT#1," "
661 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *]"
662 PRINT#1," "
663 PRINT#1,"BALANCE ";
664 PRINT#1,"

    \";BT
665 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *]";
666 PRINT#1,"

    [s *][s *][s *][s *][s *][s
 *][s *][s *][s *]"
667 PRINT#1
668 PRINT#1,"[s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *]"
669 PRINT#1
670 PRINT#1,"ALL INFORMATION COM
ES TO YOU, COURTESY OF THE BANKE
R, (P.STUBBS. COPYRIGHT 1987)"
671 FORT=1TO15
672 PRINT#1
673 NEXTT
674 REM:PRINTOUT FINISHED RETURN
ING TO MAIN MENU
675 CLOSE1:GOSUB2000
676 GOTO5
677 IFLEN(CD$(RC))=2THENCD$(RC)=
CD$(RC)+"          "
678 IFLEN(CD$(RC))=3THENCD$(RC)=
CD$(RC)+"         "
679 IFLEN(CD$(RC))=4THENCD$(RC)=
CD$(RC)+"        "
680 IFLEN(CD$(RC))=5THENCD$(RC)=
CD$(RC)+"       "
681 IFLEN(CD$(RC))=6THENCD$(RC)=
CD$(RC)+"      "
682 IFLEN(CD$(RC))=7THENCD$(RC)=
CD$(RC)+"     "
683 IFLEN(CD$(RC))=8THENCD$(RC)=
CD$(RC)+"    "
684 IFLEN(CD$(RC))=9THENCD$(RC)=
CD$(RC)+"   "
685 IFLEN(CD$(RC))=10THENCD$(RC)
=CD$(RC)+"  "
686 IFLEN(CD$(RC))=11THENCD$(RC)
=CD$(RC)+" "
687 RETURN
688 IFLEN(CI$(RC))=2THENCI$(RC)=
CI$(RC)+"                "
689 IFLEN(CI$(RC))=3THENCI$(RC)=
CI$(RC)+"               "
690 IFLEN(CI$(RC))=4THENCI$(RC)=
CI$(RC)+"              "
691 IFLEN(CI$(RC))=5THENCI$(RC)=
CI$(RC)+"             "
692 IFLEN(CI$(RC))=6THENCI$(RC)=
CI$(RC)+"            "
693 IFLEN(CI$(RC))=7THENCI$(RC)=
CI$(RC)+"           "
694 IFLEN(CI$(RC))=8THENCI$(RC)=
CI$(RC)+"          "
695 IFLEN(CI$(RC))=9THENCI$(RC)=
CI$(RC)+"         "
696 IFLEN(CI$(RC))=10THENCI$(RC)
=CI$(RC)+"        "
697 IFLEN(CI$(RC))=11THENCI$(RC)
=CI$(RC)+"       "
698 RETURN
699 IFLEN(CN$(RC))=2THENCN$(RC)=
CN$(RC)+"                "
700 IFLEN(CN$(RC))=3THENCN$(RC)=
CN$(RC)+"               "
701 IFLEN(CN$(RC))=4THENCN$(RC)=
CN$(RC)+"              "
702 IFLEN(CN$(RC))=5THENCN$(RC)=
CN$(RC)+"             "
703 IFLEN(CN$(RC))=6THENCN$(RC)=
CN$(RC)+"            "
704 IFLEN(CN$(RC))=7THENCN$(RC)=
CN$(RC)+"           "
705 IFLEN(CN$(RC))=8THENCN$(RC)=
CN$(RC)+"          "
706 IFLEN(CN$(RC))=9THENCN$(RC)=
CN$(RC)+"         "
707 IFLEN(CN$(RC))=10THENCN$(RC)
=CN$(RC)+"        "
708 IFLEN(CN$(RC))=11THENCN$(RC)
=CN$(RC)+"       "
709 IFLEN(CN$(RC))=1THENCN$(RC)=
CN$(RC)+"                   ":R
ETURN
710 IFLEN(PD$(RP))=2THENPD$(RP)=
PD$(RP)+"          "
711 IFLEN(PD$(RP))=3THENPD$(RP)=
PD$(RP)+"         "
712 IFLEN(PD$(RP))=4THENPD$(RP)=
PD$(RP)+"        "
713 IFLEN(PD$(RP))=5THENPD$(RP)=
PD$(RP)+"       "
714 IFLEN(PD$(RP))=6THENPD$(RP)=
PD$(RP)+"      "
715 IFLEN(PD$(RP))=7THENPD$(RP)=
PD$(RP)+"     "
716 IFLEN(PD$(RP))=8THENPD$(RP)=
PD$(RP)+"    "
717 IFLEN(PD$(RP))=9THENPD$(RP)=
PD$(RP)+"   "
718 IFLEN(PD$(RP))=10THENPD$(RP)
=PD$(RP)+"  "
719 IFLEN(PD$(RP))=11THENPD$(RP)
=PD$(RP)+" "
720 RETURN
721 IFLEN(PN$(RP))=2THENPN$(RP)=
PN$(RP)+"

                       "
722 IFLEN(PN$(RP))=3THENPN$(RP)=
PN$(RP)+"

                      "
723 IFLEN(PN$(RP))=4THENPN$(RP)=
PN$(RP)+"

                     "
724 IFLEN(PN$(RP))=5THENPN$(RP)=
PN$(RP)+"

                    "
725 IFLEN(PN$(RP))=6THENPN$(RP)=
PN$(RP)+"

                   "
726 IFLEN(PN$(RP))=7THENPN$(RP)=
PN$(RP)+"

                  "
727 IFLEN(PN$(RP))=8THENPN$(RP)=
PN$(RP)+"

                 "
728 IFLEN(PN$(RP))=9THENPN$(RP)=
PN$(RP)+"

                "
729 IFLEN(PN$(RP))=10THENPN$(RP)
=PN$(RP)+"

               "
730 IFLEN(PN$(RP))=11THENPN$(RP)
=PN$(RP)+"

              "
```

```
731 RETURN
732 IFLEN(ZD$(RZ))=2THENZD$(RZ)=
ZD$(RZ)+"         "
733 IFLEN(ZD$(RZ))=3THENZD$(RZ)=
ZD$(RZ)+"        "
734 IFLEN(ZD$(RZ))=4THENZD$(RZ)=
ZD$(RZ)+"       "
735 IFLEN(ZD$(RZ))=5THENZD$(RZ)=
ZD$(RZ)+"      "
736 IFLEN(ZD$(RZ))=6THENZD$(RZ)=
ZD$(RZ)+"     "
737 IFLEN(ZD$(RZ))=7THENZD$(RZ)=
ZD$(RZ)+"    "
738 IFLEN(ZD$(RZ))=8THENZD$(RZ)=
ZD$(RZ)+"   "
739 IFLEN(ZD$(RZ))=9THENZD$(RZ)=
ZD$(RZ)+"  "
740 IFLEN(ZD$(RZ))=10THENZD$(RZ)
=ZD$(RZ)+"  "
741 IFLEN(ZD$(RZ))=11THENZD$(RZ)
=ZD$(RZ)+" "
742 RETURN
743 IFLEN(ZI$(RZ))=2THENZI$(RZ)=
ZI$(RZ)+"
         "
744 IFLEN(ZI$(RZ))=3THENZI$(RZ)=
ZI$(RZ)+"
        "
745 IFLEN(ZI$(RZ))=4THENZI$(RZ)=
ZI$(RZ)+"
       "
746 IFLEN(ZI$(RZ))=5THENZI$(RZ)=
ZI$(RZ)+"
      "
747 IFLEN(ZI$(RZ))=6THENZI$(RZ)=
ZI$(RZ)+"
     "
748 IFLEN(ZI$(RZ))=7THENZI$(RZ)=
ZI$(RZ)+"
    "
749 IFLEN(ZI$(RZ))=8THENZI$(RZ)=
ZI$(RZ)+"
   "
750 IFLEN(ZI$(RZ))=9THENZI$(RZ)=
ZI$(RZ)+"
  "
751 IFLEN(ZI$(RZ))=10THENZI$(RZ)
=ZI$(RZ)+"
 "
752 IFLEN(ZI$(RZ))=11THENZI$(RZ)
=ZI$(RZ)+"
"
753 RETURN
754 IFLEN(Q1$(RS))=2THENQ1$(RS)=
Q1$(RS)+"         "
755 IFLEN(Q1$(RS))=3THENQ1$(RS)=
Q1$(RS)+"        "
756 IFLEN(Q1$(RS))=4THENQ1$(RS)=
Q1$(RS)+"       "
757 IFLEN(Q1$(RS))=5THENQ1$(RS)=
Q1$(RS)+"      "
758 IFLEN(Q1$(RS))=6THENQ1$(RS)=
Q1$(RS)+"     "
759 IFLEN(Q1$(RS))=7THENQ1$(RS)=
Q1$(RS)+"    "
760 IFLEN(Q1$(RS))=8THENQ1$(RS)=
Q1$(RS)+"   "
761 IFLEN(Q1$(RS))=9THENQ1$(RS)=
Q1$(RS)+"  "
762 IFLEN(Q1$(RS))=10THENQ1$(RS)
=Q1$(RS)+"  "
763 IFLEN(Q1$(RS))=11THENQ1$(RS)
=Q1$(RS)+" "
764 RETURN
765 IFLEN(XD$(RX))=2THENXD$(RX)=
XD$(RX)+"         "
766 IFLEN(XD$(RX))=3THENXD$(RX)=
XD$(RX)+"        "
767 IFLEN(XD$(RX))=4THENXD$(RX)=
XD$(RX)+"       "
768 IFLEN(XD$(RX))=5THENXD$(RX)=
XD$(RX)+"      "
769 IFLEN(XD$(RX))=6THENXD$(RX)=
XD$(RX)+"     "
770 IFLEN(XD$(RX))=7THENXD$(RX)=
XD$(RX)+"    "
771 IFLEN(XD$(RX))=8THENXD$(RX)=
XD$(RX)+"   "
772 IFLEN(XD$(RX))=9THENXD$(RX)=
XD$(RX)+"  "
773 IFLEN(XD$(RX))=10THENXD$(RX)
=XD$(RX)+"  "
774 IFLEN(XD$(RX))=11THENXD$(RX)
=XD$(RX)+" "
775 RETURN
776 IFLEN(XI$(RX))=2THENXI$(RX)=
XI$(RX)+"
                    "
777 IFLEN(XI$(RX))=3THENXI$(RX)=
XI$(RX)+"
                   "
778 IFLEN(XI$(RX))=4THENXI$(RX)=
XI$(RX)+"
                  "
779 IFLEN(XI$(RX))=5THENXI$(RX)=
XI$(RX)+"
                 "
780 IFLEN(XI$(RX))=6THENXI$(RX)=
XI$(RX)+"
                "
781 IFLEN(XI$(RX))=7THENXI$(RX)=
XI$(RX)+"
               "
782 IFLEN(XI$(RX))=8THENXI$(RX)=
XI$(RX)+"
              "
783 IFLEN(XI$(RX))=9THENXI$(RX)=
XI$(RX)+"
             "
784 IFLEN(XI$(RX))=10THENXI$(RX)
=XI$(RX)+"
             "
785 IFLEN(XI$(RX))=11THENXI$(RX)
=XI$(RX)+"
             "
786 RETURN
787 TT$=STR$(TT)
788 IFLEN(TT$)=2THENTT$=TT$+"
  "
789 IFLEN(TT$)=3THENTT$=TT$+"
 "
790 IFLEN(TT$)=4THENTT$=TT$+"
"
791 IFLEN(TT$)=5THENTT$=TT$+"
 "
792 IFLEN(TT$)=6THENTT$=TT$+"
"
793 IFLEN(TT$)=7THENTT$=TT$+"
"
794 IFLEN(TT$)=8THENTT$=TT$+"  "
795 RETURN
796 SOUND 1,9955,4,2,45589
797 RETURN
798 SOUND 1,9955,14,2,45589
799 RETURN
800 SOUND1,2333,1
801 RETURN
802 SOUND 3,1113,11,2,12,2,2,68
803 RETURN
804 SOUND1,2333,20
805 RETURN
806 PRINTCHR$(142):PRINTCHR$(2)"
[CLEAR][WHITE][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT]BANKER.[DOWN][DOWN]"
807 FOROO=1TOA:PRINTOO;" ";X1$(O
O)
808 NEXTOO:PRINT"[DOWN][RIGHT]PL
EASE CHOOSE THE ACCOUNT YOU WISH
 TO USE,"
809 GETB$
810 B=VAL(B$)
811 IFB=0THEN809
812 IFB>OOTHEN807
813 OO=B:PRINT"[DOWN]
          ";X2$(OO):INPUT"[UP
][RED]PLEASE INPUT YOUR NAME[WHI
TE]";XX$(1)
814 PRINT"
          ";X1$(OO):INPUT"[
UP][RED]AND THE NAME & ADDRESS O
F YOUR BANK[WHITE]";XX$(2)
815 PRINT"                  .   .";
X4$:INPUT"[UP][RED]TODAYS DATE[W
HITE] ";XX$(3)
816 PRINT"
                                ";
X3$(OO):PRINT"[RED][UP]AND FINAL
Y, WHAT NAME HAVE YOU GIVEN TO Y
OUR FILE[WHITE] "
817 INPUT"[RED][UP][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][WHITE] ";XX$(4)
818 GOTO1214
819 PRINT"[CLEAR]":PRINTTAB(12)"
[DOWN]THIS FUNCTION WILL SAVE YO
UR UPDATED FILE TO DISK."
820 PRINTTAB(17)"[DOWN][DOWN]IT
WILL THEN RETURN TO THE MAIN MEN
U."
821 PRINTTAB(20)"[DOWN][DOWN][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][DOWN][DOWN][DOWN][DOWN][DOWN][
DOWN][DOWN][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT]SAVE? (Y
/N)"
822 GETA$:IFA$="N"THEN5
823 IFA$="Y"THENRETURN
824 GOTO822
825 PRINTCHR$(2)"[CLEAR][DOWN][D
OWN][DOWN][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT]E
ND OF RUN."
826 PRINT"[DOWN][DOWN][DOWN][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT]DO YOU WIS
H TO END THE PROGRAM? (Y/N)"
827 GETA$:IFA$="N"THEN5
828 IFA$="Y"THEN830
829 GOTO827
830 PRINT"[UP][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT]HAVE YOU SAVED THE UPDAT
ED FILE? (Y/N)"
831 GETA$:IFA$="N"THEN5
832 IFA$="Y"THEN834
833 GOTO831
834 GOTO1206
835 PRINT"[CLEAR]":PRINTTAB(30)C
HR$(2)"UPDATING FILES."
```

```
836 PRINTTAB(10)"[DOWN][DOWN]THI
S OPTION IS USED TO DELETE ITEMS
 THAT APPEAR ON A BANK"
837 PRINTTAB(19)"[DOWN]STATEMENT
 ISSUED TO YOU FROM THE BANK."
838 PRINTTAB(10)"[DOWN][DOWN][DO
WN][DOWN]ALL ITEMS THAT ARE SHOW
N ON THE BANK'S STATEMENT ARE DE
LETED,"
839 PRINTTAB(14)"[DOWN]LEAVING O
NLY THE ITEMS, NOT YET CLEARED B
Y THE BANK."
840 PRINTTAB(24)"[DOWN][DOWN][DO
WN][DOWN][DOWN]DO YOU WISH TO PR
OCEED? (Y/N)."
841 GETA$:IFA$="N"THENS
842 IFA$="Y"THEN844
843 GOTO841
844 PRINT"[CLEAR]":PRINTTAB(17)"
PLEASE INPUT THE NEW BALANCE, AS
 SHOWN ON THE"
845 PRINTTAB(21)"[DOWN][DOWN]BOT
TOM OF THE ISSUED BANK'S STATEME
NT."
846 PRINTTAB(33);:INPUT"[DOWN][D
OWN][DOWN]";XX$(5)
847 GOTO851
848 XA$(1)=XX$(5):XI$(1)="BALANC
E":XD$(1)=XX$(3)
849 IFXA$(1)=""THENXA$(1)="00.00
"
850 RETURN
851 PRINT"[CLEAR][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]DELETIO
N MODE.........CHEQUES.[DOWN][DO
WN][DOWN][DOWN]"
852 T=0
853 FORB=1TOC
854 AA$(B)="":AN$(B)="":AI$(B)="
":AD$(B)=""
855 NEXTB
856 FORB=1TORC-1
857 PRINTB,CN$(B),CI$(B),CD$(B),
CA$(B)
858 NEXTB
859 INPUT"[DOWN][DOWN][DOWN]DELE
TE WHICH NUMBER (* TO END)";A$
860 IFA$="*"THEN866
861 FORW=1TO50
862 IFVAL(A$)=WTHENA=W:GOTO865
863 NEXTW
864 IFVAL(A$)=0THEN859
865 CA$(W)="*****":CN$(W)="***":
CI$(W)="********":CD$(W)="******
**":GOTO851
866 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][DOWN][DOWN][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]PLEASE
WAIT............UPDATING FILES."
867 FORRB=1TORC-1
868 IFCA$(RB)="*****"THEN870
869 AA$(RB)=CA$(RB):AN$(RB)=CN$(
RB):AI$(RB)=CI$(RB):AD$(RB)=CD$(
RB)
870 NEXTRB
871 FORZB=1TORB-1
872 IFAA$(ZB)=""THENGOSUB885
873 NEXTZB
874 T=T+1
875 IFT<ZBGOTO871
876 QQ=ZB
877 FORG1=1TOQQ
878 IFAA$(G1)=""THENQQ=QQ-1
879 NEXTG1
880 FORB=1TORB
881 CA$(B)=AA$(B):CN$(B)=AN$(B):
CI$(B)=AI$(B):CD$(B)=AD$(B)
882 NEXTB
883 C=QQ+1
884 GOTO890
885 AA$(ZB)=AA$(ZB+1):AA$(ZB+1)=
""
886 AN$(ZB)=AN$(ZB+1):AN$(ZB+1)=
""
887 AI$(ZB)=AI$(ZB+1):AI$(ZB+1)=
""
888 AD$(ZB)=AD$(ZB+1):AD$(ZB+1)=
""
889 RETURN
890 PRINT"[CLEAR][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]DELETIO
N MODE.......CASHPOINT.[DOWN][DO
WN][DOWN][DOWN]"
891 T=0:QQ=0
892 FORB=1TOP
893 AA$(B)="":AN$(B)="":AI$(B)="
":AD$(B)=""
894 NEXTB
895 FORB=1TOP-1
896 PRINTB,PD$(B),PN$(B),PA$(B)
897 NEXTB
898 INPUT"[DOWN][DOWN][DOWN]DELE
TE WHICH NUMBER (* TO END)";A$
899 IFA$="*"THEN905
900 FORW=1TO50
901 IFVAL(A$)=WTHENA=W:GOTO904
902 NEXTW
903 IFVAL(A$)=0THEN898
904 PA$(W)="*****":PN$(W)="***":
PD$(W)="********":GOTO890
905 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][DOWN][DOWN][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]PLEASE
WAIT............UPDATING FILES."
906 FORRB=1TORP-1
907 IFPA$(RB)="*****"THEN909
908 AA$(RB)=PA$(RB):AN$(RB)=PN$(
RB):AD$(RB)=PD$(RB)
909 NEXTRB
910 FORZB=1TORB-1
911 IFAA$(ZB)=""THENGOSUB924
912 NEXTZB
913 T=T+1
914 IFT<ZBGOTO910
915 QQ=ZB
916 FORG1=1TOQQ
917 IFAA$(G1)=""THENQQ=QQ-1
918 NEXTG1
919 FORB=1TORB
920 PA$(B)=AA$(B):PN$(B)=AN$(B):
PD$(B)=AD$(B)
921 NEXTB
922 P=QQ+1
923 GOTO928
924 AA$(ZB)=AA$(ZB+1):AA$(ZB+1)=
""
925 AN$(ZB)=AN$(ZB+1):AN$(ZB+1)=
""
926 AD$(ZB)=AD$(ZB+1):AD$(ZB+1)=
""
927 RETURN
928 PRINT"[CLEAR][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]DELETIO
N MODE.........OTHERS.[DOWN][DO
WN][DOWN][DOWN]"
929 T=0:QQ=0
930 FORB=1TOZ
931 AA$(B)="":AN$(B)="":AI$(B)="
":AD$(B)=""
932 NEXTB
933 FORB=1TOZ-1
934 PRINTB,ZD$(B),ZI$(B),ZA$(B)
935 NEXTB
936 INPUT"[DOWN][DOWN][DOWN]DELE
TE WHICH NUMBER (* TO END)";A$
937 IFA$="*"THEN943
938 FORW=1TO50
939 IFVAL(A$)=WTHENA=W:GOTO942
940 NEXTW
941 IFVAL(A$)=0THEN936
942 ZA$(W)="*****":ZI$(W)="***":
ZD$(W)="********":GOTO928
943 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][DOWN][DOWN][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]PLEASE
WAIT............UPDATING FILES."
944 FORRB=1TORZ-1
945 IFZA$(RB)="*****"THEN947
946 AA$(RB)=ZA$(RB):AI$(RB)=ZI$(
RB):AD$(RB)=ZD$(RB)
947 NEXTRB
948 FORZB=1TORB-1
949 IFAA$(ZB)=""THENGOSUB962
950 NEXTZB
951 T=T+1
952 IFT<ZBGOTO948
953 QQ=ZB
954 FORG1=1TOQQ
955 IFAA$(G1)=""THENQQ=QQ-1
956 NEXTG1
957 FORB=1TORB
958 ZA$(B)=AA$(B):ZI$(B)=AI$(B):
ZD$(B)=AD$(B)
959 NEXTB
960 Z=QQ+1
961 GOTO966
962 AA$(ZB)=AA$(ZB+1):AA$(ZB+1)=
""
963 AI$(ZB)=AI$(ZB+1):AI$(ZB+1)=
""
964 AD$(ZB)=AD$(ZB+1):AD$(ZB+1)=
""
965 RETURN
966 PRINT"[CLEAR][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]DELETIO
N MODE.......B.ORDERS."
967 GOSUB 1304
968 PRINT"[CLEAR][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]DELETIO
N MODE........PAYMENTS.":PRINT"[
DOWN][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]PLEASE
NOTE - THE BALANCE BF HAS ALREAD
Y BEEN ADJUSTED.[DOWN][DOWN][DOW
N][DOWN]"
969 T=0:QQ=0:GOSUB848
970 FORB=1TOX
971 AA$(B)="":AN$(B)="":AI$(B)="
":AD$(B)=""
972 NEXTB
973 FORB=1TOX-1
974 PRINTB,XD$(B),XI$(B),XA$(B)
975 NEXTB
976 INPUT"[DOWN][DOWN][DOWN]DELE
TE WHICH NUMBER (* TO END)";A$
977 IFA$="*"THEN983
978 FORW=1TO50
979 IFVAL(A$)=WTHENA=W:GOTO982
980 NEXTW
981 IFVAL(A$)=0THEN976
982 XA$(W)="*****":XI$(W)="***":
XD$(W)="********":GOTO968
```

```
983 PRINT"[CLEAR][DOWN][DOWN][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][DOWN][DOWN][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT]PLEASE
WAIT...........UPDATING FILES."
984 FORRB=1TORX-1
985 IFXA$(RB)="*****"THEN987
986 AA$(RB)=XA$(RB):AI$(RB)=XI$(
RB):AD$(RB)=XD$(RB)
987 NEXTRB
988 FORZB=1TORB-1
989 IFAA$(ZB)=""THENGOSUB1002
990 NEXTZB
991 T=T+1
992 IFT<ZBGOTO988
993 QQ=ZB
994 FORG1=1TOQQ
995 IFAA$(G1)=""THENQQ=QQ-1
996 NEXTG1
997 FORB=1TORB
998 XA$(B)=AA$(B):XI$(B)=AI$(B):
XD$(B)=AD$(B)
999 NEXTB
1000 X=QQ+1
1001 GOTO167
1002 AA$(ZB)=AA$(ZB+1):AA$(ZB+1)
=""
1003 AI$(ZB)=AI$(ZB+1):AI$(ZB+1)
=""
1004 AD$(ZB)=AD$(ZB+1):AD$(ZB+1)
=""
1005 RETURN
1006 GOSUB 1156
1007 PRINT"[CLEAR][DOWN][DOWN][W
HITE][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *]":GOSUB800
1008 PRINT"[c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +] [c L][c
U][c U][c U][c B]        [RVSON][c
 K][RVSOFF][c K]           [c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +][c +]"
1009 PRINTTAB(29)"[c L]   [RVSON
][c B][RVSOFF]          [RVSON][c K]
[RVSOFF][c K]"
1010 PRINT"[c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +] [c L][c
Y][c Y][c Y][c B] [RVSON][c B][c
 F][RVSOFF] [RVSON][c D][c F][c
K][c C][c B][RVSOFF] [RVSON][c D
][c F][c K][c B][RVSOFF][c V]
[c +][c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+]"
1011 PRINTTAB(29)"[c L][c I][c I
][c I][RVSON][c B][RVSOFF][c I][
c B][RVSON][c V][c B][RVSOFF][c
K][RVSON][c K][RVSOFF][RVSON][c
V][RVSOFF][c K][c B][RVSON][c B]
[RVSOFF][c B][c O][RVSON][c B][R
VSOFF][c O][c O] [c O]"
1012 PRINT"[s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *]":GOSUB800
1013 PRINTTAB(28)"[DOWN][DOWN][D
OWN][c A][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][c S]":GOSUB80
0
1014 PRINTTAB(28)"[s -]":GOSUB80
0
1015 PRINTTAB(28)"[c Z][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[c X]":GOSUB800
1016 PRINT"[DOWN][DOWN][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *]":G
OSUB800
1017 PRINT"[c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +][c +][c
 +][c +]
     [c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +]":G
OSUB800
1018 PRINTTAB(27)CHR$(2)"OR [_]
IF FIRST TIME USER":GOSUB800
1019 PRINT"[c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +][c +][c
 +][c +]
     [c +][c +][c +][c +][c +][c
 +][c +][c +][c +][c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +]":G
OSUB800
1020 PRINT"[DOWN][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *]":GOSUB80
0
1021 PRINTCHR$(15)TAB(27)"[UP][U
P][UP][UP][UP][UP][UP][UP][UP][U
P][UP][UP]ENTER YOUR P.I.N. NUMB
ER."
1022 INPUT"[DOWN][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT]";A$
1023 IF A$="_"THEN1028
1024 PRINTTAB(27)"[UP][UP][UP]
                    "
1025 PRINTCHR$(15)TAB(27)"[DOWN]
[RIGHT]******* LOADING *******"
1026 GOTO1123
1027 END
1028 PRINT"[CLEAR]":PRINTTAB(30)
CHR$(2)"[DOWN][DOWN][DOWN][DOWN]
[DOWN]FIRST TIME USER"
1029 INPUT"[DOWN][DOWN]ENTER A P
.I.N. CODE (PERSONAL IDENTIFICAT
ION CODE)[RIGHT]";A$
1030 PRINT"[UP]YOU HAVE CHOSEN "
;A$;" AS YOUR P.I.N. CODE.
                          "
1031 PRINT"[DOWN]IS THIS O.K. (Y
/N)"
1032 GETB$:IFB$="Y"THEN1035
1033 IFB$="N"THEN1029
1034 GOTO1032
1035 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN][DOWN][DOWN][DOWN][DOW
N][DOWN]":PRINTTAB(20)"HOW MANY
BANK ACCOUNTS DO YOU INTEND"
1036 INPUT"[RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT]TO USE TH
IS PROGRAMME FOR";A
1037 IFA=<3THEN1041
1038 PRINT"[UP][UP]
                ********** MAX 3 ***
******
 "
1039 PRINT"
1040 SLEEP1:GOTO1035
1041 IFA=0THEN1035
1042 GOSUB 1211:FOROO=1TOA:SLEEP
1:PRINT"[CLEAR][DOWN][DOWN][DOWN
][DOWN][DOWN][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT]ACCOU
NT ";OO
1043 PRINT"[DOWN][DOWN]NAME OF B
ANK     MYBANK MONEYTOWN UK"
1044 INPUT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT]";X1$(OO)
1045 PRINT"[DOWN][DOWN]ACCOUNT T
ITLE    MR & MRS BLOGGS"
1046 INPUT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT]";X2$(OO
)
1047 PRINT"[DOWN][DOWN]GIVE A FI
LENAME FOR THIS BANK   MYBANK"
1048 INPUT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
]";X3$(OO)
1049 PRINT"[CLEAR][DOWN][DOWN][D
OWN][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT]STAN
DING ORDERS DETAILS"
1050 INPUT"[DOWN]HOW MANY STANDI
NG ORDERS DO YOU HAVE AT THIS BA
NK";B(OO)
1051 F=OO:FORC=1TOB(OO)
1052 PRINTCHR$(2)"[CLEAR][DOWN][
```

```
DOWN][DOWN][DOWN]STANDING ORDER
  ":PRINTCHR$(2)"[UP][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT]";
C
1053 INPUT"[DOWN]TITLE";C1$(C,F)
:IFLEN(C1$(C,F))=>9THENC1$(C,F)=
LEFT$(C1$(C,F),9)
1054 INPUT"AMOUNT PER MONTH";C2$
(C,F)
1055 PRINT"[DOWN]IS THIS A STAND
ING ORDER OR A REPAYABLE LOAN (S
/L)"
1056 GETD$(C,F):IFD$(C,F)="L"THE
N1060
1057 IFD$(C,F)="S"THEN1059
1058 GOTO1056
1059 NEXTC:IFC>B(OO)THEN1072
1060 PRINT"[DOWN]WHEN WAS YOUR F
IRST PAYMENT (MONTH)  01"
1061 INPUT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT]";C3(C,F)
1062 PRINT"[DOWN]WHEN WAS YOUR F
IRST PAYMENT (YEAR)   88"
1063 INPUT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT]";C4(C,F)
1064 INPUT"[DOWN]OVER HOW MANY M
ONTHS IS THIS PAYABLE";C5(C,F)
1065 LP(C,F)=0
1066 LP(C,F)=C3(C,F):C6(C,F)=C4(
C,F)
1067 FORX=C3(C,F)TOC3(C,F)+C5(C,
F)-1
1068 LP(C,F)=LP(C,F)+1
1069 IFLP(C,F)=13THENC6(C,F)=C6(
C,F)+1:LP(C,F)=1
1070 NEXTX
1071 NEXTC
1072 NEXTOO
1073 PRINT"[CLEAR][DOWN][DOWN]DE
TAILS MODE. YOU ARE NOW INVITED
TO CHECK ALL THE INFORMATION YOU
 HAVE JUST  [RIGHT]INPUTED.":PR
INT"[DOWN][DOWN]PLEASE CHECK ALL
 THE DETAILS THOUROUGHLY.":SLEEP
4
1074 PRINTCHR$(2)"[DOWN][DOWN]DE
TAILS":PRINT"[DOWN]P.I.N. NUMBER
 = ";A$
1075 PRINT"[DOWN]AMOUNT OF ACCOU
NTS = ";A:PRINT"[DOWN][DOWN][DOW
N][HIT ANY KEY]":GETKEYB$
1076 FOROO=1TOA:F=OO
1077 PRINTCHR$(2)"[CLEAR]ACCOUNT
 ";OO
1078 PRINT"BANK NAME = ";X1$(OO)
;
1079 PRINT"[RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT]ACCOUNT TITLE = ";
X2$(OO)
1080 PRINT"FILE NAME = ";X3$(OO)
1081 PRINT"AMOUNT OF STANDING OR
DERS = ";B(OO)
1082 FOR C=1TOB(OO)
1083 PRINTCHR$(2)"STANDING ORDER
 ";C
1084 PRINT"S.O. TITLE  = ";C1$(C
,F)
1085 PRINT"AMOUNT PAYED PER MONT
H = ";C2$(C,F)
1086 IF D$(C,F)="S"THEN1091
1087 PRINT"FIRST PAYMENT = ";C3(
C,F);"/";C4(C,F)
1088 PRINT"AMOUNT OF MONTHS = ";
C5(C,F)
1089 PRINT"LAST PAYMENT = ";LP(C
,F);"/";C6(C,F)
1090 NEXTC:GOTO1093
1091 PRINT"THIS STANDING ORDER I
S OF THE CONTINUAL TYPE"
1092 NEXTC
1093 PRINT"[ HIT ANY KEY ]":GETK
EYW$
1094 NEXTOO
1095 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN][DOWN][DOWN]WAS ALL TH
IS INFORMATION CORRECT (Y/N)"
1096 PRINT"[DOWN][DOWN][DOWN]IF
YOU ANSWER YES, A FILE USING THE
 P.I.N. CODE ";A$;" WILL BE FORM
ED"
1097 PRINT"[DOWN]USING THIS INFO
RMATION."
1098 PRINT"[DOWN][DOWN][DOWN][DO
WN]IF YOU ANSWER NO, YOU WILL NE
ED TO START AGAIN."
1099 GETC$:IFC$="Y"THEN1102
1100 IFC$="N"THEN1028
1101 GOTO 1099
1102 OPEN 2,8,2,"@0:"+A$+",S,W"
1103 PRINT#2,A:PRINT#2,X4$
1104 FOROO=1TOA
1105 PRINT#2,X1$(OO)
1106 PRINT#2,X2$(OO)
1107 PRINT#2,X3$(OO)
1108 PRINT#2,B(OO)
1109 F=OO
1110 FORC=1TOB(OO)
1111 PRINT#2,C1$(C,F)
1112 PRINT#2,C2$(C,F)
1113 PRINT#2,D$(C,F)
1114 C3$(C,F)=STR$(C3(C,F)):PRIN
T#2,C3$(C,F)
1115 C4$(C,F)=STR$(C4(C,F)):PRIN
T#2,C4$(C,F)
1116 C5$(C,F)=STR$(C5(C,F)):PRIN
T#2,C5$(C,F)
1117 LP$(C,F)=STR$(LP(C,F)):PRIN
T#2,LP$(C,F)
1118 C6$(C,F)=STR$(C6(C,F)):PRIN
T#2,C6$(C,F)
1119 NEXTC
1120 NEXTOO
1121 CLOSE2
1122 GOTO1143
1123 GOSUB 1148:OPEN 2,8,2,"0:"+
A$+",S,R"
1124 INPUT#2,A:INPUT#2,X4$
1125 FOROO=1TOA
1126 INPUT#2,X1$(OO)
1127 INPUT#2,X2$(OO)
1128 INPUT#2,X3$(OO)
1129 INPUT#2,B(OO)
1130 F=OO
1131 FORC=1TOB(OO)
1132 INPUT#2,C1$(C,F)
1133 INPUT#2,C2$(C,F)
1134 INPUT#2,D$(C,F)
1135 INPUT#2,C3$(C,F):C3(C,F)=VA
L(C3$(C,F))
1136 INPUT#2,C4$(C,F):C4(C,F)=VA
L(C4$(C,F))
1137 INPUT#2,C5$(C,F):C5(C,F)=VA
L(C5$(C,F))
1138 INPUT#2,LP$(C,F):LP(C,F)=VA
L(LP$(C,F))
1139 INPUT#2,C6$(C,F):C6(C,F)=VA
L(C6$(C,F))
1140 NEXTC
1141 NEXTOO
1142 CLOSE2:RETURN
1143 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN]YOUR FILE HAS NOW BEEN
 FORMED."
1144 PRINT"[DOWN][DOWN]HIT ANY K
EY, AND YOU WILL BE RETURNED TO
THE FRONT PAGE........."
1145 PRINT"[DOWN][DOWN]SIMPLY TA
P IN YOUR NEWLY FORMED P.I.N. CO
DE AND YOU WILL BE READY TO STAR
T."
1146 GETKEYW$
1147 GOTO1007
1148 OPEN 2,8,2,"0:"+A$+",S,R"
1149 IF DS>1 THEN1152
1150 CLOSE2
1151 RETURN
1152 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN]":PRINTDS$
1153 PRINT"RETURNING TO PROGRAM"
1154 SLEEP4
1155 RUN
1156 DIM C1$(10,10):DIMC2$(10,10
):DIMC3(10,10):DIMC4(10,10):DIMC
5(10,10):DIMLP(10,10):DIMD$(10,1
0):DIMC6(10,10):DIMC9(100):DIMC1
0(100)
1157 DIM C(100):DIM CN$(100):DIM
 CD$(100): DIM CA$(100): DIM CI$
(100): DIMRC(100):DIM CN(100):DI
MCT(100):DIMCT$(100)
1158 DIM B(100):DIM PN$(100):DIM
 PD$(100): DIM PA$(100): DIMRP(1
00):DIMPN(100):DIMPT(100)
1159 DIM A9$(100):DIM AO$(100):D
IM A1$(100): DIM A2$(100)
1160 DIM ZB(100):DIM ZD$(100):DI
M ZI$(100): DIM ZA$(100):DIMRZ(1
00)
1161 DIM X(100):DIM XD$(100):DIM
 XI$(100): DIM XA$(100): DIMRX(1
00):DIMZN(300):DIMZT(100): DIM X
N(100):DIM XT(100):DIM RB(100):D
IM P(100):DIM Z(100)
1162 DIM Q1$(100):DIM Q2$(100):D
IM C9$(100):DIMCO$(100)
1163 DIM Q1(100):DIM Q2(100):DIM
 ST(100)
1164 DIMAA$(100):DIMAN$(100):DIM
 AI$(100):DIMAD$(100):RETURN
1165 OPEN 5,8,5,"0:"+X$+",S,R"
1166 IF DS>1 THEN1169
1167 CLOSE5
1168 RETURN
1169 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN]":PRINTDS$
1170 PRINT"[DOWN]ARE YOU OPENING
 THIS FILE FOR THE FIRST TIME? (
Y/N)"
1171 GETB$:IFB$="Y"THENXX(1)=1:C
LOSE5:C=1:P=1:Z=1:X=2:GOTO5
1172 IFB$="N"THEN1174
1173 GOTO1171
1174 PRINT"[DOWN][DOWN]THE FILEN
AME THAT YOU ENTERED VIA YOUR P.
I.N. FILE"
1175 PRINT"[DOWN]WAS ;";X3$(OO)
1176 PRINT"[DOWN]IS THIS CORRECT
? (Y/N)
1177 GETB$:IFB$="Y"THENXX$(4)=X3
$(OO):GOTO1181
1178 IF B$="N"THEN1180
1179 GOTO1177
1180 INPUT"[DOWN]NEW FILENAME IS
 ";XX$(4)
1181 CLOSE5:V=0:XX(1)=0:GOTO5
1182 PRINT"[CLEAR][DOWN][DOWN]"
1183 PRINTTAB(26)CHR$(2)"STANDIN
G ORDERS VIEWING PAGE."
1184 PRINT"[DOWN][DOWN]TODAYS DA
TE IS ";XX$(3)
1185 F=OO:FORA=1TOB(OO)
1186 PRINT"[DOWN]STANDING ORDER
";A;" TITLE ";C1$(A,F);" COST ";
C2$(A,F)
1187 IFD$(A,F)="L"THEN1191
1188 PRINT"[DOWN]THIS STANDING O
RDER IS OF THE CONTINUAL TYPE."
1189 PRINT"THEREFORE IT WILL BE
DEDUCTED EVERY MONTH."
```

```
1190 GOTO1194
1191 PRINT"[DOWN]THE FIRST MONTH
S PAYMENT FOR THIS ORDER WAS ";C
3(A,F);"/";C4(A,F)
1192 PRINT"AND THE ORDER IS FOR
";C5(A,F);" MONTHS."
1193 PRINT"THEREFORE THIS ORDER
EXPIRES ON ";LP(A,F);"/";C5(A,F)
1194 PRINT"[DOWN]HIT ANY KEY]"
1195 GETKEYB$
1196 NEXTA
1197 RETURN
1198 OPEN 5,8,5,"0:"+X$+",S,R"
1199 IF DS>1 THEN1202
1200 CLOSE5
1201 RETURN
1202 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN]":PRINTDS$
1203 PRINT"[DOWN][DOWN][DOWN]YOU
 ARE BEING RETURNED TO THE PROGR
AMME, TRY AGAIN"
1204 SLEEP4
1205 XX(1)=1:RETURN
1206 REM ENDING PROG ROUTINE.
1207 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN][RIGHT][RIGHT][RIGHT]D
O YOU WISH TO (A) CALCULATE ANOT
HER ACCOUNT, OR (B) END THE PROG.
RAMME."
1208 GETB$:IFB$="A"THENRUN
1209 IFB$="B"THENPRINT"[CLEAR]EN
DING.":SYS65341
1210 GOTO1208
1211 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN]PLEASE TYPE IN THE YEA
R  88"
1212 INPUT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT]";X4$
1213 RETURN
1214 PRINT"[RED]ARE YOU OPENING
THE FILE FOR THE FIRST TIME[WHIT
E]  NO"
1215 INPUT"[UP][WHITE][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT]";SS$
1216 PRINT"[DOWN][DOWN]IS THE AB
OVE INFORMATION CORRECT (Y/N)"
1217 GETA$:IFA$="N"THEN806
1218 IFA$="Y"THEN1220
1219 GOTO1217
1220 IFSS$="YES"THENXX(1)=1:GOTO
1221
1221 RETURN
1222 X$=XX$(4)
1223 OPEN5,8,5,"0:"+X$+",S,R"
1224 INPUT#5,Z:INPUT#5,XX$(5)
1225 INPUT#5,P
1226 INPUT#5,C
1227 INPUT#5,X
1228 INPUT#5,OO
1229 INPUT#5,B(OO)
1230 INPUT#5,XA$(1)
1231 INPUT#5,RC
1232 INPUT#5,CT(RC)
1233 INPUT#5,RP
1234 INPUT#5,PT(RP)
1235 INPUT#5,RZ
1236 INPUT#5,ZT(RZ)
1237 F=OO
1238 INPUT#5,ST(G)
1239 INPUT#5,RX
1240 INPUT#5,XT(RX)
1241 INPUT#5,TT
1242 INPUT#5,BT
1243 INPUT#5,G
1244 FORA=1TO(C-1)
1245 INPUT#5,CD$(A)
1246 INPUT#5,CN$(A)
1247 INPUT#5,CA$(A)
1248 INPUT#5,CI$(A)
1249 NEXTA
1250 FORB=1TO(P-1)
1251 INPUT#5,PD$(B)
1252 INPUT#5,PN$(B)
1253 INPUT#5,PA$(B)
1254 NEXTB
1255 FORB=1TO(Z-1)
1256 INPUT#5,ZI$(B)
1257 INPUT#5,ZD$(B)
1258 INPUT#5,ZA$(B)
1259 NEXTB
1260 FORA=1TO(X-1)
1261 INPUT#5,XI$(A)
1262 INPUT#5,XD$(A)
1263 INPUT#5,XA$(A)
1264 NEXTA
1265 FORGQ=1TOG
1266 INPUT#5,C9(GQ)
1267 INPUT#5,C10(GQ)
1268 INPUT#5,Q1$(GQ)
1269 INPUT#5,Q2$(GQ)
1270 NEXTGQ
1271 CLOSE5
1272 GOTO1165
1273 PRINT"[CLEAR][DOWN][DOWN][D
OWN][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT]YOU HAVE ATTEMPTED TO LOAD
IN A FILE"
1274 PRINT"[DOWN][DOWN][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT]T
HAT HAS BEEN STARTED ON ONE DATE
"
1275 PRINT"[DOWN][DOWN][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT]AND YOU ARE TRYING
 TO LOAD IT AT AN EARLIER DATE"
1276 PRINT"[DOWN][DOWN][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT](FOR EXAMPLE IF TH
E FILE WAS STARTED IN MARCH '88.
"
1277 PRINTTAB(19)"[DOWN][RIGHT][
RIGHT][RIGHT][RIGHT]YOU CANNOT L
OAD IT IN JANUARY '88)"
1278 PRINTTAB(29)"[DOWN][DOWN][R
VSON]HIT ANY KEY TO RE-START"
1279 GETKEYB$
1280 RUN
1281 IF CN$(1)=""THENCN$(1)="NIL
"
1282 IF CD$(1)=""THENCD$(1)="NIL
"
1283 IF CA$(1)=""THENCA$(1)="OO.
OO"
1284 IF CI$(1)=""THENCI$(1)="NIL
"
1285 IF PN$(1)=""THENPN$(1)="NIL
"
1286 IF PD$(1)=""THENPD$(1)="NIL
"
1287 IF PA$(1)=""THENPA$(1)="OO.
OO"
1288 IF XI$(1)=""THENXI$(1)="NIL
"
1289 IF XD$(1)=""THENXD$(1)="NIL
"
1290 IF XA$(1)=""THENXA$(1)="OO.
OO"
1291 IF ZI$(1)=""THENZI$(1)="NIL
"
1292 IF ZD$(1)=""THENZD$(1)="NIL
"
1293 IF ZA$(1)=""THENZA$(1)="OO.
OO"
1294 IF XX$(5)=""THENXX$(5)="OOO
.OO"
1295 RETURN
1296 PRINTTAB(9)"[CLEAR][DOWN][D
OWN][DOWN][DOWN][DOWN]FOR THE SA
VING SEQUENCE TO WORK CORRECTLY.
 YOU WILL HAVE TO RETURN"
1297 PRINTTAB(12)"[DOWN][DOWN]TO
 THE MASTER MENU AND VEIW THE BA
NKERS ORDERS. (OPTION 4,2)
1298 PRINT"[DOWN][DOWN][DOWN][DO
WN][DOWN][DOWN]HIT ANY KEY."
1299 GETKEYB$
1300 XX(1)=1:GOTO5
1301 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN][DOWN][DOWN][DOWN][DOW
N][DOWN][DOWN][DOWN][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT]PLEASE WAIT.
 CALCULATING THE BANKERS ORDERS
."
1302 RETURN
1303 PRINT"[HOME][DOWN][DOWN][DO
WN][DOWN][DOWN][DOWN][DOWN][DOWN
][DOWN][DOWN][DOWN][RIGHT][RIGHT
][RIGHT][RIGHT][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT]

":RETURN
1304 GOTO1305
1305 T=0:QQ=0
1306 FORB=1TOG
1307 A9$(B)="":AO$(B)="":A1$(B)=
"":A2$(B)=""
1308 NEXTB
1309 FORB=1TOG
1310 C9$(B)=STR$(C9(B)):CO$(B)=S
TR$(C10(B))
1311 NEXTB
1312 PRINT"[CLEAR][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT]DELETI
ON MODE........B.ORDERS.[DOWN][D
OWN][DOWN][DOWN]"
1313 FORB=1TOG
1314 PRINTB,C9$(B);".";CO$(B),Q1
$(B),Q2$(B)
1315 NEXTB
1316 INPUT"[DOWN][DOWN][DOWN]DEL
ETE WHICH NUMBER (* TO END)";A$
1317 IFA$="*"THEN1323
1318 FORW=1TO50
1319 IFVAL(A$)=WTHENA=W:GOTO1322
1320 NEXTW
1321 IFVAL(A$)=OTHEN1316
1322 C9$(W)="**":CO$(W)="**":Q1$
(W)="********":Q2$(W)="*****":GO
TO1312
1323 PRINT"[CLEAR][DOWN][DOWN][D
OWN][DOWN][DOWN][DOWN][DOWN][DOW
N][DOWN][DOWN][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT]PLEASE
 WAIT...........UPDATING FILES.
"
1324 FORRB=1TOG
1325 IFC9$(RB)="**"THEN1327
1326 A9$(RB)=C9$(RB):AO$(RB)=CO$
```

```
(RB):A1$(RB)=Q1$(RB):A2$(RB)=Q2$
(RB)
1327 NEXTRB
1328 FORZB=1TORB
1329 IFA9$(ZB)=""THENGOSUB1344
1330 NEXTZB
1331 T=T+1
1332 IFT<ZBGOTO1329
1333 QQ=ZB
1334 FORG1=1TOQQ
1335 IFA9$(G1)=""THENQQ=QQ-1
1336 NEXTG1
1337 FORB=1TORB
1338 C9$(B)=A9$(B):C0$(B)=A0$(B)
:Q1$(B)=A1$(B):Q2$(B)=A2$(B)
1339 C9(B)=VAL(C9$(B)):C10(B)=VA
L(C0$(B))
1340 NEXTB
1341 G=QQ
1342 IFG=0THENGOSUB1363
1343 RETURN
1344 A9$(ZB)=A9$(ZB+1):A9$(ZB+1)
=""
1345 A0$(ZB)=A0$(ZB+1):A0$(ZB+1)
=""
1346 A1$(ZB)=A1$(ZB+1):A1$(ZB+1)
=""
1347 A2$(ZB)=A2$(ZB+1):A2$(ZB+1)
=""
1348 RETURN
1349 GOSUB1303:PRINT"[UP][UP][UP
][UP][c B][c A][s *][s *][s *][s
 *][s *][s *][s *][s *][c R][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][c R][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][c S]"
1350 PRINT"[s B]MONTH   [s B]ORD
ER              [s B]AMOUNT     [s
 B]":GOSUB 800
1351 PRINT"[c Z][s *][s *][s *][
s *][s *][s *][s *][s *][c E][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][c E][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][c X]":GOSUB 800
1352 IFG=0THEN RETURN
1353 ST(0)=0:   FORT=1TOG
1354 PRINT"[s B]             [s B]
              [s B]           [s
 B]":GOSUB 800
1355 PRINT"[UP][RIGHT]"C9(T);"."
;C10(T)
1356 PRINT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT]"Q1$(T)
1357 PRINT"[UP][RIGHT][RIGHT][RI
GHT][RIGHT][RIGHT][RIGHT][RIGHT]
[RIGHT][RIGHT][RIGHT][RIGHT][RIG
HT][RIGHT][RIGHT][RIGHT][RIGHT][
RIGHT][RIGHT][RIGHT][RIGHT][RIGH
T][RIGHT][RIGHT][RIGHT][RIGHT][R
IGHT][RIGHT][RIGHT][RIGHT]"Q2$(T
)
1358 Q2(T)=VAL(Q2$(T))
1359 ST(T)=ST(T-1)+Q2(T)
1360 NEXT:T=T-1:RETURN
1361 C10(G+1)=C10(G):C9(G+1)=C9(
G)+1:IFC9(G+1)=>13THENC9(G+1)=1:
C10(G+1)=C10(G)+1 :RETURN
1362 GOTO200
1363 G=1:C9(1)=C7:C10(1)=C8:Q1$(
1)="NIL":Q2$(1)="00.00":RETURN
2000 FORA=1TORC-1
2001 CD$(A)=LEFT$(CD$(A),8)
2002 CI$(A)=LEFT$(CI$(A),9)
2003 CN$(A)=LEFT$(CN$(A),8)
2004 NEXTA
2005 FORA=1TORP-1
2006 PD$(A)=LEFT$(PD$(A),8)
2007 PN$(A)=LEFT$(PN$(A),9)
2008 NEXTA
2009 FORA=1TORZ-1
2010 ZD$(A)=LEFT$(ZD$(A),8)
2011 ZI$(A)=LEFT$(ZI$(A),11)
2012 NEXTA
2013 FORA=1TORS-1
2014 Q1$(A)=LEFT$(Q1$(A),9)
2015 NEXTA
2016 FORA=1TORX-1
2017 XD$(A)=LEFT$(XD$(A),8)
2018 XI$(A)=LEFT$(XI$(A),8)
2019 NEXTA
2020 TT$=LEFT$(TT$,8)
2021 RETURN
2030 PRINT#1,"[s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *]"
2031 PRINT#1,"     [c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +] [c L][c U
][c U][c U][c B]       [RVSON][c
 K][RVSOFF][c K]            [c +][c
 +][c +][c +][c +][c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +]"
2032 PRINT#1,"
       [c L]    [RVSON][c B][RVSO
FF]       [RVSON][c K][RVSOFF][c
K]"
2033 PRINT#1,"     [c +][c +][c +
][c +][c +][c +][c +][c +][c +][
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +] [c L][c Y
][c Y][c Y][c B] [RVSON][c B][c
F][RVSOFF] [RVSON][c D][c F][c K
][c C][c B][RVSOFF] [RVSON][c D]
[c F][c K][c B][RVSOFF][c V]    [
c +][c +][c +][c +][c +][c +][c
+][c +][c +][c +][c +][c +][c +]
[c +][c +][c +][c +][c +]"
2034 PRINT#1,"
       [c L][c I][c I][c I][RVSO
N][c B][RVSOFF][c I][c B][RVSON]
[c V][c B][RVSOFF][c K][RVSON][c
 K][RVSOFF][RVSON][c V][RVSOFF][
c K][c B][RVSON][c B][RVSOFF][c
B][c O][RVSON][c B][RVSOFF][c O]
[c O] [c O]"
2035 PRINT#1,"[s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *][s *][s *][s *][s *]
[s *][s *][s *][s *][s *][s *][s
 *][s *][s *][s *][s *][s *][s *
][s *][s *][s *][s *][s *][s *][
s *][s *][s *][s *][s *][s *][s
*][s *][s *]"
2036 PRINT#1,"                   "
2037 RETURN
```

Turbo Touch

PROGRAM: TURBO TOUCH

```
F8   1 REM "TURBO TOUCH" COPYRIGH
     T 1988
12   2 REM MARCO H. WESTERWEEL
EA   3 REM HAAKSBERGEN, THE NETHE
     RLANDS
3F   5 :
CA   10 INPUT"[CLR,DOWN] FILE NAM
     E...";FF$:FF=LEN(FF$):IFFF<1
     ORFF>16THEN10
6E   15 PRINT"[CLR,DOWN] STOP HIG
     HLIGHTING KEYS AT HOW MANY"
09   20 INPUT"[DOWN] KEYS PER MIN
     UTE (1 - 150)...";MT$:MT=VAL
     (MT$):IFMT<1ORMT>150THEN15
64   25 PRINT"[CLR]":DIMT%(1600),
     TY$(23):OPEN8,8,8,"0:TT/INTR
     O SCREEN,S,R"
7D   30 FORTY=1TO23:INPUT#8,T1$:I
     NPUT#8,T2$:TY$(TY)=T1$+T2$:N
     EXT:CLOSE8
EC   35 Z$="[RVSON,PURPLE,SPC39]"
     :GOSUB310:PRINT"[HOME,DOWN]"
     ;
47   40 FORTY=1TO23:PRINTTY$(TY):
     TY$(TY)="":NEXT:OPEN8,8,8,"0
     :"+FF$+",S,R"
E6   45 F1=F1+1:INPUT#8,T%(F1):IF
     T%(F1)<>999THEN45
E0   50 CLOSE8:T1=T%(1):T2=T%(2):
     FORTA=1TO(T1-1):TA(TA)=5:NEX
     T:TA(T1)=T2
D8   55 SO=54272:FORSS=SOTOSO+24:
     POKESO,0:NEXT:POKESO+24,15
92   60 FORZ=1TO38:Z1$=Z1$+"[CT]"
     :Z2$=Z2$+"[C@]":Z3$=Z3$+" ":
     NEXT:ZZ=0:Q1$="[HOME]":FORQ1
     =1TO18
56   65 Q1$=Q1$+"[DOWN]":NEXT:Q2$
     ="[LEFT9,DOWN]":Q3$="[RVSON,
     PURPLE,C@9]"+Q2$
E8   70 Q4$="[RVSON,C1,CG,SM]IN:[
     SS]EC[CM]"+Q2$+"[CG,ST]OTAL
      [CM]"+Q2$+"[CG,ST]OT/[SM]IN
     [CM]"+Q2$:Q5$="[RVSON,PURPLE
     ,CT9]"+Q2$
FA   75 Q6$="[RVSON,C1,CG,SE]RROR
     S [CM]"+Q2$+"[CG,SE]RR/[ST]O
     T[CM]"+Q2$:Q7$=Q3$+Q4$+Q5$
C7   80 Q8$=Q3$+Q6$+Q5$:S$(1)="[H
     OME,DOWN,RIGHT2]":FORS=2TO5:
     S$(S)=S$(S-1)+"[DOWN]":NEXT
66   85 DIMK$(88),F$(88):QL$="[DO
     WN,LEFT3]":I$="[RVSON,RED,CD
     ,CI,CF]"+QL$+"[RVSOFF,CK]":B
     $="[RVSON,RED,CK]"+QL$+"[CC,
     RVSOFF,CI,RVSON,CV]"
7A   90 TT$="[RVSON,RED,SPC3]"+QL
     $+" ":BB$="[RVSON,RED] "+QL$
     +"[SPC3]":QR$="[DOWN2,RIGHT]
     ":SQ$(1)="[HOME,DOWN7,RIGHT4
     ]"
B6   95 FORSQ=2TO4:SQ$(SQ)=SQ$(SQ
     -1)+QR$:NEXT:QS$=SQ$(4):K(0)
     =0:K(1)=13:K(2)=25
5F   100 K(3)=36:K(4)=46:K$="1234
     567890+-£[SQ,SW,SE,SR,ST,SY,
     SU,SI,SO,SP]@*[SA,SS,SD,SF,S
     G,SH,SJ,SK,SL]:;[SZ,SX,SC,SV
     ,SB,SN,SM],./":X$="[BLACK]"
DC   105 FORK=1TO4:FORKK=K(K-1)+1
     TOK(K):IF(KK>25ANDKK<30)OR(K
     K>31ANDKK<36)THENX$="[BLUE]"
28   110 M$=X$+"[RVSON]"+MID$(K$,
     KK,1):SQ$(K)=SQ$(K)+"[RIGHT2
     ]":X$="[BLACK]"
AB   115 F$(KK)=SQ$(K)+I$+M$+B$:K
     $(KK)=SQ$(K)+TT$+M$+BB$:NEXT
     :NEXT
F5   120 SB$="[DOWN3,RIGHT7] [SS]
     PACE [SB]AR ":K$(48)=QS$+"[R
     VSON,BLACK]"+SB$:F$(48)=QS$+
     "[RVSOFF,BLACK]"+SB$
27   125 SH$="[DOWN,BLACK,SS]HIFT
     ":S1$=QS$+"[LEFT3]"+SH$:S2$=
     SQ$(4)+"[RIGHT3]"+SH$:FORK=4
     9TO68:READS1
```

```
E9  130 K$(K)="[RVSON]"+S1$+K$(S
    1):F$(K)="[RVSOFF]"+S1$+F$(S
    1):NEXT:FORK=69TO88:READS2
9D  135 K$(K)="[RVSON]"+S2$+K$(S
    2):F$(K)="[RVSOFF]"+S2$+F$(S
    2):NEXT
21  140 DIMA(88):FORAA=1TO88:REA
    DA(AA):NEXT::FR=FRE(0):GOSUB
    310
0F  145 GOSUB250:FORZX=1TO48:PRI
    NTK$(ZX):NEXT:TI$="000000":M
    I$="00":TG=1:TX=0:XT=0
A8  150 PRINT"[RVSON]"S1$S2$
0F  155 TX=2:TT=2:FORTB=1TOT1:PR
    INT"[HOME,DOWN,RIGHT2,RVSON,
    BLUE]";:FORTC=1TOA(TB):TT=T
    T+1
8D  160 TD=T%(TT):FORTE=1TOTD:TT
    =TT+1:PRINTCHR$(T%(TT));:NEX
    T:PRINTCHR$(13)"[RIGHT2,RVSO
    N,BLUE]";
3B  165 NEXT:FORTC=1TOA(TB):TX=
    TX+1:TD=T%(TX):FORTE=1TOTD:T
    X=TX+1
8A  170 GT=T%(TX):TG$=CHR$(GT):R
    E=0
F6  175 IFGT>31THENIFGT<94THENIF
    GT<>61THENGT=GT-31:GOTO190
06  180 IFGT>192THENIFGT<219THEN
    GT=GT-130:GOTO190
80  185 GOTO220
63  190 IFTM<MTTHENPRINTK$(A(TG)
    )F$(A(GT))
21  195 GETGT$:IFGT$=""THEN195
F2  200 IFGT$=CHR$(133)THENGOSUB
    310:PRINT"[HOME]";:END
34  205 IFGT$<>TG$THENGOSUB280:G
    OTO195
3B  210 TG=GT:IFTM>MT-1THENIFRE=
    1THENPRINTK$(A(TG))
C0  215 PRINTS$(TC)TAB(TE+1)"[RV
    SON,BLACK]"TG$
7C  220 NEXT:GOSUB300:TL=TL+TD:M
    1$=MID$(TI$,3,2):M2$=RIGHT$(
    TI$,2):MI$=M1$+":"+M2$
9E  225 M1=VAL(M1$)*60:M2=VAL(M2
    $):TM=INT((TL*60)/(M1+M2)):E
    T=INT(100*(ER/TL)+.5)
7B  230 PRINTQ1$"[DOWN,RVSON,PUR
    PLE]"TAB(15)MI$:PRINTTAB(14)
    "[RVSON,PURPLE]";TL:PRINTTAB
    (14)"[RVSON,PURPLE,SPC4,LEFT
    4]";TM
81  235 PRINTQ1$"[DOWN,RVSON,PUR
    PLE]"TAB(34);ER:PRINTTAB(34)
    "[RVSON,PURPLE,SPC4,LEFT4]";
    ET;"[LEFT]%"
23  240 IFTM>MT-1THENPRINTK$(A(T
    G))
92  245 NEXT:PRINTK$(A(TG)):PRIN
    T"[HOME,DOWN]";:FORZ2=1TO5:P
    RINT"[RIGHT,RVSON,BLUE]"Z3$:
    NEXT:NEXT:GOTO155
48  250 PRINT"[HOME]";:PRINT"[RV
    SON,PURPLE,CM,BLUE]"Z1$:POKE
    1063,229:POKE55335,4:FORZ=1T
    O5:PRINT"[RVSON,PURPLE,CM,BL
    UE]"Z3$
5F  255 ZZ=ZZ+40:POKE1063+ZZ,229
    :POKE55335+ZZ,4:NEXT:PRINT"[
    RVSON,PURPLE,CM,BLUE]"Z2$:PO
    KE1303,229
44  260 POKE55575,4:ZZ=0:FORZ=1T
    O10:PRINT"[RVSON,PURPLE,CM,R
    ED]"Z3$:ZZ=ZZ+40:POKE1303+ZZ
    ,229
21  265 POKE55575+ZZ,4:NEXT:PRIN
    T"[RVSON,PURPLE,CM,RED]"Z2$:
    POKE1743,229:POKE56015,4:ZZ=
    0
A1  270 PRINTQ1$TAB(5)Q7$Q1$TAB(
    25)Q8$
BF  275 PRINTQ1$"[DOWN6,RVSON,PU
    RPLE]"TAB(10)"[SP]RESS [BLAC
    K] [SF]1 [PURPLE] TO QUIT.[U
    P]":RETURN
F8  280 POKESO+3,6:POKESO+2,127:
    POKESO+5,15:POKESO+6,0:POKES
    O+1,6:POKESO,127
EA  285 POKESO+4,65:FORT=1TO200:
    NEXT:POKESO+4,64:FORT=1TO50:
    NEXT
DD  290 IFRE=0THENER=ER+1:RE=1:I
    FTM>MT-1THENPRINTF$(A(GT))
A6  295 RETURN
36  300 POKESO+3,100:POKESO+2,12
    7:POKESO+5,9:POKESO+6,10:POK
    ESO+1,100:POKESO,127
B7  305 POKESO+4,65:FORT=1TO100:
    NEXT:POKESO+4,64:FORT=1TO25:
    NEXT:RETURN
B1  310 POKE53281,15:POKE53280,4
    :POKE53272,23:ZZ=0
8E  315 PRINT"[HOME]";:FORZ=1TO2
    4:PRINTZ$:ZZ=ZZ+40:POKE1023+
    ZZ,160
8E  315 PRINT"[HOME]";:FORZ=1TO2
    4:PRINTZ$:ZZ=ZZ+40:POKE1023+
    ZZ,160
2F  320 POKE55295+ZZ,4:NEXT:PRIN
    TZ$"[UP]":POKE2023,160:POKE5
    6295,4:ZZ=0:RETURN
CA  325 DATA 6,7,8,9,44,45,46,35
    ,36,31,21,32,33,34,43,42,22,
    23,20,19
63  330 DATA 1,2,3,4,5,26,41,39,
    28,16,29,30,14,17,27,18,40,1
    5,38,37
08  335 DATA 48,69,70,71,72,73,4
    9,50,51,52,25,11,44,12,45,46
    ,10,1,2,3,4,5,6,7,8,9
D5  340 DATA 35,36,53,0,54,55,24
    ,26,41,39,28,16,29,30,31,21,
    32,33,34,43,42,22,23
56  345 DATA 14,17,27,18,20,40,1
    5,38,19,37,56,13,57,74,75,76
    ,77,78,79,80,58,59,60
CE  350 DATA 61,62,63,64,65,66,8
    1,82,83,84,67,85,86,87,68,88
```

PROGRAM:TT/FILE MAKER

```
CF  1 REM TT/FILE MAKER
F8  2 REM COPYRIGHT 1988, M. H.
    WESTERWEEL
C4  3 REM HAAKSBERGEN, THE NETHE
    RLANDS.
3F  5 :
C0  9 POKE53280,11:POKE53281,0:P
    RINT"[C8]"
B5  10 SQ$="[HOME,DOWN24]":Y=1:L
    =1:DIMT%(1600),L$(40):POKE53
    272,23
97  15 H$="[CLR,DOWN]  [RVSON,SR
    ]ETURN[RVSOFF]:[SN]EW LINE,
    [RVSON,SD]EL[RVSOFF]:[SD]ELE
    TE, [RVSON,SF]2[RVSOFF]:[SS]
    AVE [HOME,DOWN3]":PRINTH$"[R
    IGHT2,RVSON] [RVSOFF]"
43  20 ET$=LEFT$(SQ$,24)+" [RVSO
    N] * ..........[SE]ND OF TEX
    T.......... * "
B1  25 GETGT$:IFGT$=""THEN25
E8  30 GT=ASC(GT$):IFGT>31THENIF
    GT<94THENIFGT<>61THEN75
69  35 IFGT>192THENIFGT<219THEN7
    5
91  40 IFGT<>13THEN55
D7  45 GOSUB195:IFL=21THENY=1:L2
    =1:PRINTH$"[RIGHT2,RVSON] [R
    VSOFF]"ET$
1E  50 IFL=41THENL=40:GOTO130
95  55 IFGT=20THENGOSUB105:GOTO2
    5
72  60 IFGT=137THEN130
D0  65 IFGT=34THENGT=39
34  70 GOTO25
C8  75 IFGT=34THENGT$=CHR$(34)+C
    HR$(34)+"[LEFT] [LEFT]"
61  80 LN=LEN(L$(L)):IFLN<36THEN
    95
4F  85 GOSUB195:IFL=21THENY=1:L2
    =1:PRINTH$"[RIGHT2,RVSON] [R
    VSOFF]"ET$
16  90 IFL=41THENL=40:GOTO130
BF  95 L$(L)=L$(L)+CHR$(GT):LN=L
    EN(L$(L)):PRINTLEFT$(SQ$,Y+3
    )TAB(LN+1)GT$"[RVSON] "
2A  100 GOTO25
5E  105 NL=0:IFLN<1THENL=L-1:Y=Y
    -1:NL=1:LN=LEN(L$(L)):IFL<1T
    HENL=1:Y=1:GOTO120
2A  110 IFL=20THENIFL2=1THENY=20
    :PRINTH$;:FORZ=1TO20:PRINT"[
    RIGHT2]"L$(Z):NEXT:L2=0
F4  115 IFLN>0THENL$(L)=LEFT$(L$
    (L),LN-1):LN=LEN(L$(L))
D4  120 IFNL=1THENPRINTLEFT$(SQ$
    ,Y+4)TAB(2)"[RVSOFF] "
2B  125 PRINTLEFT$(SQ$,Y+3)TAB(L
    N+2)"[RVSON] [RVSOFF] ":RETU
    RN
D9  130 IFL$(L)=""THENL=L-1
B0  135 INPUT"[CLR,DOWN] FILE NA
    ME...";F$:FF=LEN(F$):IFFF<1O
    RFF>16THEN130
0D  140 OPEN8,8,8,"0:"+F$+",S,W"
52  145 LB=L/5:LA=INT(LB):IFLA=L
    BTHENT%(1)=LA:T%(2)=5:GOTO15
    5
53  150 LC=L-(5*LA):T%(1)=LA+1:T
    %(2)=LC
0B  155 PRINT#8,T%(1):PRINT#8,T%
    (2):TT=2:FORLD=1TOL:LE$=L$(L
    D):LE=LEN(LE$):TT=TT+1
F1  160 T%(TT)=LE:PRINT#8,T%(TT)
    :FORLF=1TOLE:TT=TT+1:T%(TT)=
    ASC(MID$(LE$,LF,1))
7D  165 PRINT#8,T%(TT):NEXT:NEXT
    :TT=TT+1:T%(TT)=999:PRINT#8,
    T%(TT):CLOSE8:YN=1
C8  170 IFFF>13THENF$=LEFT$(F$,1
    3)
7C  175 YN$="":INPUT"[CLR,DOWN]
    MAKE A COPY (Y/N)...";YN$:IF
    YN$<>"Y"THENIFYN$<>"N"THEN17
    5
61  180 IFYN$="N"THENEND
BD  185 YN=YN+1:PRINT"[CLR,DOWN]
     COPYING...":F$=LEFT$(F$,FF)
    +STR$(YN)
ED  190 OPEN8,8,8,"0:"+F$+",S,W,
    ":FORTF=1TOTT:PRINT#8,T%(TF)
    :NEXT:CLOSE8:GOTO175
CB  195 LL$=L$(L):LL=LEN(LL$):IF
    LL=0THEN210
21  200 IFRIGHT$(LL$,1)=" "THENL
    $(L)=LEFT$(LL$,LL-1):GOTO195
97  205 PRINTLEFT$(SQ$,Y+3)TAB(L
    N+2)"[RVSOFF] "LEFT$(SQ$,Y+4
    )TAB(2)"[RVSON] ":L=L+1:Y=Y+
    1:LN=0
DF  210 IFLL=0THENPRINTLEFT$(SQ$
    ,Y+3)TAB(LN+2)"[RVSOFF] "LEF
    T$(SQ$,Y+3)TAB(2)"[RVSON] "
59  215 RETURN
```

PROGRAM:SCREEN MAKER

```
87  1 OPEN8,8,8,"TT/INTRO SCREEN
    ,S,W"
32  2 READA:IFA=256THENCLOSE8:EN
    D
36  3 PRINT#8,CHR$(A);:GOTO2
BB  4 DATA 32,32,32,32,32,32,32,
    32
49  5 DATA 32,32,32,146,144,32,4
```

```
   2,32
6A 6 DATA 208,82,69,83,69,13,14
   6,144
EA 7 DATA 78,84,73,78,71,32,42,
   32
2C 8 DATA 18,156,32,32,32,32,32
   ,32
20 9 DATA 32,32,32,32,32,13,18,
   156
7D 10 DATA 32,32,32,32,32,32,32
   ,32
E4 11 DATA 32,32,32,32,32,32,32
   ,32
AF 12 DATA 32,32,32,13,18,156,3
   2,32
BA 13 DATA 32,32,32,32,32,32,32
   ,32
81 14 DATA 32,32,32,32,32,32,32
   ,32
C0 15 DATA 32,13,18,156,32,32,3
   2,164
B5 16 DATA 144,164,164,164,164,
   164,164,164
36 17 DATA 164,164,164,164,164,
   164,164,164
D2 18 DATA 13,18,144,164,164,16
   4,164,164
B4 19 DATA 164,164,164,164,164,
   164,164,164
C7 20 DATA 164,164,32,156,32,32
   ,32,13
95 21 DATA 18,156,32,32,32,28,1
   65,32
C9 22 DATA 32,32,32,32,32,32,32
   ,32
C3 23 DATA 32,32,32,32,32,32,13
   ,18
D8 24 DATA 28,32,32,32,32,32,32
   ,32
FB 25 DATA 32,32,32,32,32,32,32
   ,167
29 26 DATA 144,32,156,32,32,32,
   13,18
87 27 DATA 156,32,32,32,28,165,
   32,32
4B 28 DATA 172,144,162,162,187,
   28,32,172
61 29 DATA 144,187,28,172,144,1
   87,28,32
AE 30 DATA 172,144,162,162,13,1
   8,144,187

DA 31 DATA 28,32,172,144,162,16
   2,187,28
2E 32 DATA 32,172,144,162,162,1
   87,28,32
E2 33 DATA 32,32,167,144,32,156
   ,32,32
4B 34 DATA 32,13,18,156,32,32,3
   2,28
6B 35 DATA 165,32,32,31,32,32,3
   2,28
C5 36 DATA 190,32,31,32,144,161
   ,31,32
1D 37 DATA 144,161,28,32,31,32,
   32,32
EB 38 DATA 13,18,144,161,28,32,
   31,32
31 39 DATA 32,32,144,161,28,32,
   31,32
3B 40 DATA 32,32,144,161,28,32,
   32,32
1B 41 DATA 167,144,32,156,32,32
   ,32,13
22 42 DATA 18,156,32,32,32,28,1
   65,32
37 43 DATA 32,32,31,32,144,161,
   28,32
A6 44 DATA 32,31,32,144,161,31,
   32,144
99 45 DATA 161,28,32,31,32,146,
   144,188
CB 46 DATA 18,31,32,13,18,28,19
   0,32
22 47 DATA 31,32,146,144,188,18
   ,31,32
2A 48 DATA 28,190,32,31,32,144,
   161,31
53 49 DATA 32,144,161,28,32,32,
   32,167
31 50 DATA 144,32,156,32,32,32,
   13,18
BF 51 DATA 156,32,32,32,28,165,
   32,32
6A 52 DATA 32,31,32,144,161,28,
   32,32
A6 53 DATA 31,32,144,161,31,32,
   144,161
13 54 DATA 28,32,31,32,32,28,19
   1,13
21 55 DATA 18,144,187,28,32,31,
   32,32
19 56 DATA 28,191,144,187,28,32
   ,31,32
22 57 DATA 144,161,31,32,144,16
   1,28,32
3F 58 DATA 32,32,167,144,32,156
   ,32,32
A9 59 DATA 32,13,18,156,32,32,3
   2,28
00 60 DATA 165,32,32,32,31,32,1
   44,161
4C 61 DATA 28,32,32,31,32,146,1

   44,188
AB 62 DATA 18,31,32,144,161,28,
   32,31
81 63 DATA 32,144,161,31,32,13,
   18,144
16 64 DATA 161,28,32,31,32,146,
   144,188
AA 65 DATA 18,31,32,144,161,28,
   32,31
02 66 DATA 32,146,144,188,18,31
   ,32,144
29 67 DATA 161,28,32,32,32,167,
   144,32
B8 68 DATA 156,32,32,32,13,18,1
   56,32
FD 69 DATA 32,32,28,165,32,32,3
   2,31
06 70 DATA 32,28,190,32,32,31,3
   2,32
47 71 DATA 32,28,190,32,31,32,2
   8,190
3C 72 DATA 31,32,13,18,28,190,3
   2,31
95 73 DATA 32,32,32,28,190,32,3
   1,32
3C 74 DATA 32,32,28,190,32,32,3
   2,167
3E 75 DATA 144,32,156,32,32,32,
   13,18
6E 76 DATA 156,32,32,32,28,165,
   32,32
FA 77 DATA 32,32,32,32,32,32,32
   ,32
29 78 DATA 32,32,32,32,32,13,18
   ,28
08 79 DATA 32,32,32,32,32,32,32
   ,32
A6 80 DATA 32,32,32,32,32,32,16
   7,144
F9 81 DATA 32,156,32,32,32,13,1
   8,156
30 82 DATA 32,32,32,28,165,32,3
   2,172
85 83 DATA 144,162,162,187,28,3
   2,172,144
7D 84 DATA 162,162,187,28,32,17
   2,144,187
77 85 DATA 28,172,13,18,144,187
   ,28,32
65 86 DATA 172,144,162,162,187,
   28,32,172
9F 87 DATA 144,187,28,172,144,1
   87,28,32
E1 88 DATA 32,32,167,144,32,156
   ,32,32
63 89 DATA 32,13,18,156,32,32,3
   2,28
32 90 DATA 165,32,32,31,32,32,3
   2,28
1F 91 DATA 190,32,31,32,32,32,1
   44,161

9D 92 DATA 28,32,31,32,144,161,
   31,32
6E 93 DATA 13,18,144,161,28,32,
   31,32
3A 94 DATA 32,32,28,190,32,31,3
   2,144
D6 95 DATA 161,31,32,144,161,28
   ,32,32
79 96 DATA 32,167,144,32,156,32
   ,32,32
34 97 DATA 13,18,156,32,32,32,2
   8,165
52 98 DATA 32,32,32,31,32,144,1
   61,28
7D 99 DATA 32,32,31,32,144,161,
   31,32
31 100 DATA 144,161,28,32,31,32
   ,144,161
7C 101 DATA 31,32,13,18,144,161
   ,28,32
50 102 DATA 31,32,144,161,28,32
   ,32,32
4A 103 DATA 31,32,146,144,188,1
   8,31,32
0A 104 DATA 144,161,28,32,32,32
   ,167,144
61 105 DATA 32,156,32,32,32,13,
   18,156
F3 106 DATA 32,32,32,28,165,32,
   32,32
4A 107 DATA 31,32,144,161,28,32
   ,32,31
A9 108 DATA 32,144,161,31,32,14
   4,161,28
80 109 DATA 32,31,32,144,161,31
   ,32,13
96 110 DATA 18,144,161,28,32,31
   ,32,144
31 111 DATA 161,28,32,32,32,31,
   32,32
E6 112 DATA 32,144,161,28,32,32
   ,32,167
F0 113 DATA 144,32,156,32,32,32
   ,13,18
58 114 DATA 156,32,32,32,28,165
   ,32,32
E3 115 DATA 32,31,32,144,161,28
   ,32,32
DF 116 DATA 31,32,146,144,188,1
   8,31,32
F3 117 DATA 144,161,28,32,31,32
   ,146,144
AC 118 DATA 188,18,31,32,13,18,
   144,161
10 119 DATA 28,32,31,32,146,144
   ,188,18
61 120 DATA 162,187,28,32,31,32
   ,144,161
8B 121 DATA 31,32,144,161,28,32
   ,32,32
10 122 DATA 167,144,32,156,32,3

   2,32,13
5F 123 DATA 18,156,32,32,32,28,
   165,32
8C 124 DATA 32,32,31,32,28,190,
```

```
     32,32
B0   125 DATA 31,32,32,32,28,190,
     32,31
38   126 DATA 32,32,32,13,18,28,1
     90,32
CA   127 DATA 31,32,32,32,28,190,
     32,31
0B   128 DATA 32,28,190,31,32,28,
     190,32
82   129 DATA 32,32,167,144,32,15
     6,32,32
28   130 DATA 32,13,18,156,32,32,
     32,28
49   131 DATA 165,32,32,32,32,32,
     32,32
3B   132 DATA 32,32,32,32,32,32,3
     2,32
8E   133 DATA 13,18,28,32,32,32,3
     2,32
39   134 DATA 32,32,32,32,32,32,3
     2,32
CB   135 DATA 32,167,156,32,32,32
     ,32,13
A1   136 DATA 18,156,32,32,32,163
     ,163,163
9E   137 DATA 163,163,163,163,163
     ,163,163,163
84   138 DATA 163,163,163,163,163
     ,13,18,156
FC   139 DATA 163,163,163,163,163
     ,163,163,163
8A   140 DATA 163,163,163,163,163
     ,163,163,32
86   141 DATA 32,32,32,13,18,156,
     32,32
C6   142 DATA 32,32,146,144,32,40
     ,195,41
3A   143 DATA 49,57,56,56,32,205,
     65,82
1D   144 DATA 67,79,32,13,146,144
     ,200,46
59   145 DATA 32,215,69,83,84,69,
     82,87
FC   146 DATA 69,69,76,32,18,156,
     32,32
F0   147 DATA 32,32,32,13,18,156,
     32,32
4B   148 DATA 32,32,32,32,32,32,3
     2,32
42   149 DATA 32,32,32,32,32,32,3
     2,32
DF   150 DATA 32,13,18,156,32,32,
     32,32
B0   151 DATA 32,32,32,32,32,32,3
     2,32
48   152 DATA 32,32,32,32,32,32,3
     2,13
D6   153 DATA 18,156,32,32,32,32,
     208,76
52   154 DATA 69,65,83,69,32,87,6
     5,73
A2   155 DATA 84,32,65,32,77,13,1
     8,156
F3   156 DATA 73,78,85,84,69,32,4
     0,79
4E   157 DATA 82,32,83,79,41,32,3
     2,32
E5   158 DATA 32,32,32,13,18,156,
     32,32
51   159 DATA 32,32,87,72,73,76,6
     9,32
19   160 DATA 80,82,79,71,82,65,7
     7,32
F0   161 DATA 71,13,18,156,69,84,
     83,32
53   162 DATA 79,82,71,65,78,73,9
     0,69
40   163 DATA 68,46,46,46,32,32,3
     2,13,256
```

Join The Dots!

Twenty four pin dot matrix printers have become a viable alternative to laser printing. But which one should you buy?

By Robin Burton

Only two or three years ago, a serious question everybody was obliged to ask was, is it Epson compatible? Nowadays, unless you're buying a micro specific printer (or an odd one) you can forget this – virtually all printers conform to what is now the accepted standard.

Given the overall improvement in features and facilities you might think there's no longer much to choose between one model and the next. However, depending on the make and model, you can still spend two, three or even four times the amount for essentially the same type of device to do the same job. So what do you get for your hard-earned readies, and what justifies the higher prices?

Of course no-one thinks the home user who occasionally lists a program, dumps a screen or writes a letter needs the same printer as a business producing a couple of hundred receipts a day, or the school with a dozen micros throwing listings at a single network printer at the same time. The fact is though, no-one wants to spend more than necessary, and while businesses or schools may have a larger budget than the home user, it's often more rigid too.

Decision

Impressions conveyed by reviews are inevitably subjective, and while most try to provide a balanced view, remember that your opinion is the important one – reviews are merely pointers. For a large purchase like a printer, you should always see and compare several in your price range before you decide. Buying a printer is a serious business for most of us, and a mistake can be expensive.

Separate the vital features from those that would be a bonus. If you have a very special application, you might need to take a disc to your dealer and ask to see the results from your job. If the dealer is keen on service as well as price, he won't mind. If you buy from a 'box shifter' you may save money, but find that you pay for it in lack of support later. Bear in mind that most of us will expect our printer to last for years.

While evaluating these printers, it occurred to me that many potential buyers would have been nine pin users for perhaps several years, and might be unaware of features that are 'standard' for 24 pin machines. A large proportion of these facilities are quite beyond the capabilities of even the most expensive nine pin models of just a few years ago. Before moving on to the individual reports perhaps a little education is appropriate, especially if you're unfamiliar with current printer capabilities and trends.

Orientation

The most obvious additional feature of most current printrs is the provision of several LQ font styles, usually with the ability to add more. In addition, many of the combined print-mode restrictions which apply to older printers (for example the inability to use condensed and Elite mode together) no longer apply. In simple terms, current printers have more sophisticated internal software. This is because some have moved to 16 bit processors, whereas older printers used eight bit controllers.

Buffer sizes are more generous these days too, because RAM is cheaper and three of the four here are typical. Virtually all current 24 pin printers also have commands for left, right and full text justification, centring a line of text and tabbing to a specified absolute position, regardless of the current font or pitch.

The number of pitches too is increased, 10, 12 and 15 being standard, with expanded and

condensed modes on top of these, plus the ability to vary inter-character spacing for all of them. Usually, additional effects can also be overlaid, like outline or shadow print, and most can provide double height as well. You can usually mix any of these, but condensed 15 pitch isn't possible. Whether your printer control software can handle all these print mode combinations and effects is of course a separate question, and one that should also be considered if you expect to be able to take advantage of all the new facilities.

I feel that one other item has been credited with more than it deserves by some write-ups – push feed tractors are undoubtedly capable of more flexible and convenient operation, but desirable though it is, 'paper parking' has nothing to do with reducing paper wastage. If printing must start right from the top of a new page, as it always does for fully formatted pages, it doesn't matter whether your printer's tractor pushes or pulls. Contrary to suggestions I've read, neither system accommodates this need.

The only solution is to leave the last printed sheet attached until you start printing the next. Really the truth is that most users want the convenience of continuous paper, but actually print only one or two sheets at a time. If you print continuously the problem doesn't exist, but if you don't, the only perfect solution is a printer that moves the paper up for tear-off, then moves it back ready for the further output. Such devices do exist, but not usually at the sort of prices most of us would want to hear about.

Evaluation

One area where subjectivity can be eliminated is the speed at which a printer performs. The results for our selection can be compared in the table that follows. The tests were carried out under identical conditions.

The test consisted of exactly 5000 bytes of this review, printed in Courier at 10cpi by all the printers. This included a page throw with a one inch top and bottom margin, blank lines between paragraphs, but no headings. It produced one-and-a-half pages of typical text on standard 11 inch paper at six lines per inch. I haven't quoted manufacturers' figures, because they have little or nothing to do with reality, and they don't all seem to use the same magical formula for calculation anyway.

As an aside, I've often wondered why there's no BSI test for printers, or why performance claims are not subject to the Sale of Goods Act. I've had this particular bee in my bonnet ever since testing my trusty FX80 many years ago. I found it couldn't even print spaces at anything close to its claimed speed (and in fairness the FX80 was a lot nearer than many others). The figures here are real, and you can expect to achieve them yourself.

Samples of print are also illustrated to show some of the styles, but magazine reproduction, however good, puts a limit on the validity of this for personal judgement. Again, always see (and hear) the real thing yourself before you make your mind up.

Two of the models, the LC24-10 and the LQ-500, are at the lower end of the 24 pin price range, and must compete head-on in the home-user market. The bias towards this end of the range is intended to reflect the interest of the majority of readers.

On the other hand, if you've ever wondered what higher priced printers have to offer, (the ones that your dealer doesn't stock and other magazines don't review) read on and be enlightened.

Star LC24-10 Multi-font

The first thing to strike me as I unpacked the LC24-10 is how extremely neat and tidy it is. There are no bits and pieces sticking out, and few to stick on. Preparation for use involved installing the ribbon cartridge, pushing the carriage knob on and plugging in. Unlike most printers, the mains lead isn't separate, it's permanently wired in and has a moulded-on plug. This is very convenient, but the lead could be a little longer, especially since it's not so simple to change to a longer one.

Setting it up

The interface is Centronics (parallel) and the lead plugs in at the rear of the right side out of the way of paper. Although not a problem for most uses, it appears that there is no serial interface, nor any other options.

The ribbon cartridge is the compact type which moves with the print-head, and it couldn't be easier to fit – lift the top cover, place the cartridge in position and press. I found no need to touch the ribbon, so no inky fingers – excellent. It was so easy I actually removed and replaced it twice just to make sure it wasn't a fluke!

The LC24-10 also handles cut-sheet paper, for which a separate paper guide slots into place when needed. Apart from the A5 wire-bound 110 page manual there was nothing else in the box – a good start! Construction quality seems to be on the right side of adequate. Neither the printer's case nor its top cover suggest flimsy construction or the need for over-careful handling, and I wouldn't expect long-term durability of the breakable bits to be a problem.

Control of the pre-set options uses the familiar dip-switches, and these are also accessed by lifting the top cover. You don't need to disturb the printer or paper to alter them, nor do you have to be a contortionist, but they are a little smaller and therefore more fiddly than some. Setting the options is explained clearly in a question-and-answer style in the manual, and no LC24 owner should be baffled by these (except for the print below).

The manual is quite well laid out, with ASCII, decimal and hexadecimal codes shown for each command. There's a reasonable index and a complete command list but in ASCII code order, which is fine if you already know the code that you're looking for(?)! I was surprised that there was no separate quick reference card, nor is there a list of commands grouped by function. As a result, finding a particular command usually involved diving into the index, a minor but real irritation, the novelty of which soon wore off.

On the front of the printer, at the left is the main power switch and at the right a slot for either a replaceable font cartridge or a RAM card. If you use this for additional fonts, each card provides an additional style, but the manual contains no information on what these are. Alternatively you can plug in a battery-backed RAM card which expands the printer's standard 7K buffer, though again the manual doesn't say by how much.

Specification

The LC24-10 provides both Epson LQ-800 and IBM Proprinter X24 emulation, giving the usual 96 ASCII characters, or 244 in IBM mode including graphics. Fourteen national character sets are catered for.

From an initial check of the print specifications and paper handling, I rapidly formed the impression that this printer was thoughtfully and comprehensively designed from the beginning. Happily this was confirmed when testing began. Star seem to have managed to combine obvious style with sensible, practical operation and a remarkable range of print facilities.

Five fonts are provided as standard, with italics available for all of them. Other effects include outline, shadow, double width, double height, triple width and double or quad size.

One area which sometimes causes problems for 24 pin printers is vertical paper movement when used with existing software designed for 9 pin printers, but it's no problem for the LC24-10. Vertical spacing can be controlled in either 180ths for 24 pin software, or 216ths for nine pin compatibility as you please.

Another notable 'extra' is that vertical spacing can also be controlled at twice the normal 24 pin resolution. This means that, both vertically and horizontally, you can produce dots at 360 per inch, a higher density that most laser printers, although the LC24's individual dots are obviously larger.

Using the Star

Continuous paper feeds through a slot in the back of the printer and is controlled by a push-feed tractor. When the paper runs out, a small portion of the rear of the case lifts off to make loading very simple. The rest of the time there's no need to remove the paper, even for a change to cut sheet operation. Press a couple of buttons and the paper automatically parks out of the way, but still engaged by the sprockets. Move the paper release lever to its alternate position, and cut sheets can then be used.

Cut sheet loading is also semi-automatic. Drop paper in the guide, pull the bail rod lever forward and the paper is fed through leaving a one inch prop margin. Put the bail rod back and start printing. To resume continuous printing is also easy. Move the paper release lever back, pull the bail rod lever and the continuous paper feeds through again – then let the bail rod lever go and start printing. It's actually more difficult to describe than do.

On the top at the front of the printer, there are four membrane-covered micro-switches. Whether you like membrane switches or not is personal taste – I don't, but those on the LC24-10 do operate with a satisfying click, so at least you can be sure of what you're doing.

One of these switches is on/off line, and with the other three in various combinations all five font styles, with or without italics and in 10, 12, 15, 17 and 20 cpi can be selected. Two of the switches, if pressed at power-up, can also prevent either the type-style and/or the pitch from being subsequently altered by software. The usual line feed, form feed, self test and hex, dump facilities are also provided by these switches. All this initially sounds potentially confusing, but after a minute or two it becomes quite clear.

Printing can begin about an inch of the top of a page, and for continuous paper the wastage when you tear off is about an inch and a half. The tear-off cutting edge would be better if it were serrated, I found it necessary to take when if a reasonably straight tear was to be achieved. Print quality was good for all the LQ fonts, unless (unfairly) compared to the SQ-2500's. I must say I wasn't very impressed by the draft font though – 'adequate is the most I can say about it.

Often 24 pin printers sound 'nastier' than equal speed nine pin devices, (more pins = more noise) but the LC's noise level seemed about average, and was quite acceptable. Unlike some printers, the quality of the noise didn't advertise itself too obviously as emanating from a 24 pin device, but like most printers, you wouldn't want to stand next to it when making a phone call.

The LC24-10 proved 100% reliable throughout the test, and performed precisely to specification.

Conclusion

The LC24-10 is an excellently designed and very neat, compact printer. It has eminently practical, easy to use facilities, together with an unusually wide range of fonts, print effects and sizes. Eleven out of ten for effort, Star – it shows.

The recommended retail price is £399. Extra font cards are £49 and RAM cards are £59, (all plus VAT, giving £458.85, £56.35 and £67.85 respectively).

After a quick scan through current magazines, I found the LC24-10 advertised at around £290 plus VAT. At this price, value for money isn't a question. If you are buying an 80 column printer, the LC24-10 MUST be high on your short-list.

Epson LQ-500

The first job after removing the LQ-500 from its box was to measure it. I was surprised that it's slightly smaller in width and depth than the Star, the square styling and greater height are misleading. The height is because the top-mounted tractor and its cover are already fitted. The ribbon, paper feed knob and mains lead are the only other fittings needed immediately.

Setting it up

However, there is a bit more left in the box than the manual and a cut sheet guide at this stage. The mains lead is separate from the printer, and perhaps importantly, it's longer than the Star's. A parallel interface is standard, but again in contrast to the Star, the 230 page manual lists three alternative serial interfaces, two IEEE interfaces and two buffers, 32K and 128K, for both parallel and serial connection.

The interface lead plugs in at the rear, as does the power lead, and one of the extra bits in the box is the paper rest, an extension to the back of the printer so that continuous paper can be kept clear of the leads. The ribbon cartridge is full width and fits to the printer chassis, not the print-head. Fitting was quite straightforward; but it's necessary to manoeuvre the ribbon with a pencil, fingers or something similar. As the manual suggests, it's easier if the print-head is moved to the centre to do this. The remaining parts consist of the cut sheet paper guide

and its top cover.

Quality of construction is very good – the case and both covers are distinctly robust. I noticed as I inspected the printer that there was no bail-rod. Quite neatly, Epson have dispensed with this and built deep ribs into the acrylic covers to keep the paper against the platen, while at the same time increasing the strength of the covers.

Because the tractor is top-mounted, the minimum distance from the top of a sheet to the first print line is about 2.75 inches. Also there's no tear-off facility with the tractor unit, except the perforations in the paper. To remove a printed sheet always involves the loss of about half a page, unless you wind the paper back.

The LQ-500's dip-switches are located under a removable cover on the right of the printer towards the rear. They're easy to reach and nothing need be disturbed to do so. Control of all the usual pre-sets is provided, and this manual too adopts a question and answer system to help setting up (but see also the self-test feature below).

I altered two switches from the 'as delivered' state, one to select 11 instead of 12 inch paper, the other to enable the 8K buffer rather than download definitions. The manual doesn't give information on downloadable capacity. One of four extra fonts can be added by inserting a font cartridge next to the dip switches, out of sight under the same cover.

The first 50 pages of the manual contain a thorough guide to setting up followed by another 50 pages on general use and trouble-shooting, so even first time users should have few problems. Control codes are given in ASCII, decimal and hexadecimal form, with direct keyboard versions too where possible. Each command is also accompanied by a generous explanation where necessary.

The manual's contents list is rather more thorough than the Star's, and there's also a glossary of terms, as well as a fair index. Commands are summarised both by name and task, which, with the tear-out quick reference card, ensures that locating an unfamiliar or seldom used command is easy.

Specification

The LQ-500 is, of course Epson compatible, and the IBM block graphics characters between ASCII 128 and 255 are included, together with accented and Greek characters and some maths symbols. IBM emulation is not supported. The manual acknowledges this and offers some suggestions for setting up DOS software, but while most recent DOS software caters for Epson printers, old software may not. In this case the bottom line is you may have trouble. 13 national characters sets are supported.

Three fonts are provided as standard, each of course with italic versions. Additional effects are outline, shadow, double width and double height. All fonts are available in 10, 12 and 15 pitch, and all can be condensed, except 15 pitch. Vertical spacing is controlled in 1/180ths of an inch, while the minimum horizontal movement is 1/360th.

Using the Epson

Continuous paper feeds over the back of the printer, and must be pushed round the platen and on to the sprockets by hand. The process isn't as fiddly as it sounds, but since a change to cut sheet means removing both the paper and the tractor unit, it's just as well.

Both the tractor and its top cover are simple to remove, and the paper guide covers are as easy to fit, but it's not the sort of job you'd want to do every few minutes. Whether this is a problem to you only you can decide, but I suspect that in practice the average user doesn't actually change stationery very often. Loading cut sheet paper is semi-automatic. Drop a sheet in the guide and with the printer still on-line, press the line-feed button and the paper feeds through. In cut sheet mode, pressing the form-feed button ejects the printed sheet when you reach the bottom.

On the top at the right side of the printer are three buttons – the rear one is on/off line, and the other two provide all manual control. With the printer on-line, repeated pressing of the form-feed button cycles through the available fonts, including the one provided by the cartridge if fitted. Pitches can't be changed by these buttons, but must be pre-selected by dip-switch or altered by software.

Line feed, form feed, self-test and hex. dump are also provided by these buttons, but the self test has an excellent extra. In addition to fulfilling its obvious function, all the dip-switch configuration options are printed, with the current selections highlighted by emphasised print, so even if you aren't confident about setting dip-switches, checking what you've done is done for you. A nice touch.

Print quality was good – the standard 'Roman' font (unique to Epson, I believe) looks particularly clean and clear. Using 10 pitch Courier (provided by cartridge) for a direct comparison, the LQ-500's print seemed to me slightly clearer than the LC24's, with, for example, the letter 'O' a fraction larger (or is it rounder?). In truth, if there is any difference it's not much, so I asked my wife to compare a page of each (without any other information) and she could see no difference between them. This is obviously an area where subjectivity reigns supreme, so judge for yourself.

One font where the LQ did have a definite edge was in draft mode. Draft on the LC24, though quite legible, was inferior. This probably explains the LC's slight 'catching up' in the draft speed test compared to LQ (see table). I'd guess that in the interests of ribbon life and print speed many home users would operate in draft mode most of the time, so don't underestimate the importance of this – make sure you compare them. The LQ's draft was much more a 'real' typeface, and I found it more pleasant to read.

The noise level from the LQ-500 was OK, certainly no more than the LC24's. Given that, at least on my test, the LQ's draft print was about 6% faster and letter quality 11% faster than the LC24, you'd reasonably expect a little more noise. The fact that there isn't might reflect the LQ's slightly heavier construction.

The LQ performed faultlessly throughout the test.

Conclusion

The LQ-500 is Epson's bottom-of-the-range 24 pin printer. It is very solidly built and simple to use, though the paper handling distinctly shows its age. This might be unacceptable if you swap stationery frequently. While not providing such a range of fonts and controls as the LC24-10, all the 'standard' 24 pin facilities are present, and these would be quite adequate for most uses.

In some areas the LQ-500 has the edge. For special applications needs there is a wide range of interface options. If output speed and draft quality are important factors, the LQ-500 might be preferred.

The recommended retail price is £399, and extra font cards are £55. (£458.85 and £63.25 including VAT).

Again checking recent magazines produced a different story, and I found the LQ-500 frequently advertised for about £10 to £15 less than the LC24-10.

Citizen HQP45:

The HQP-45 is a wide carriage printer, so the first job was to make space for it. The remaining contents of the box were the mains lead, the ribbon and two manuals.

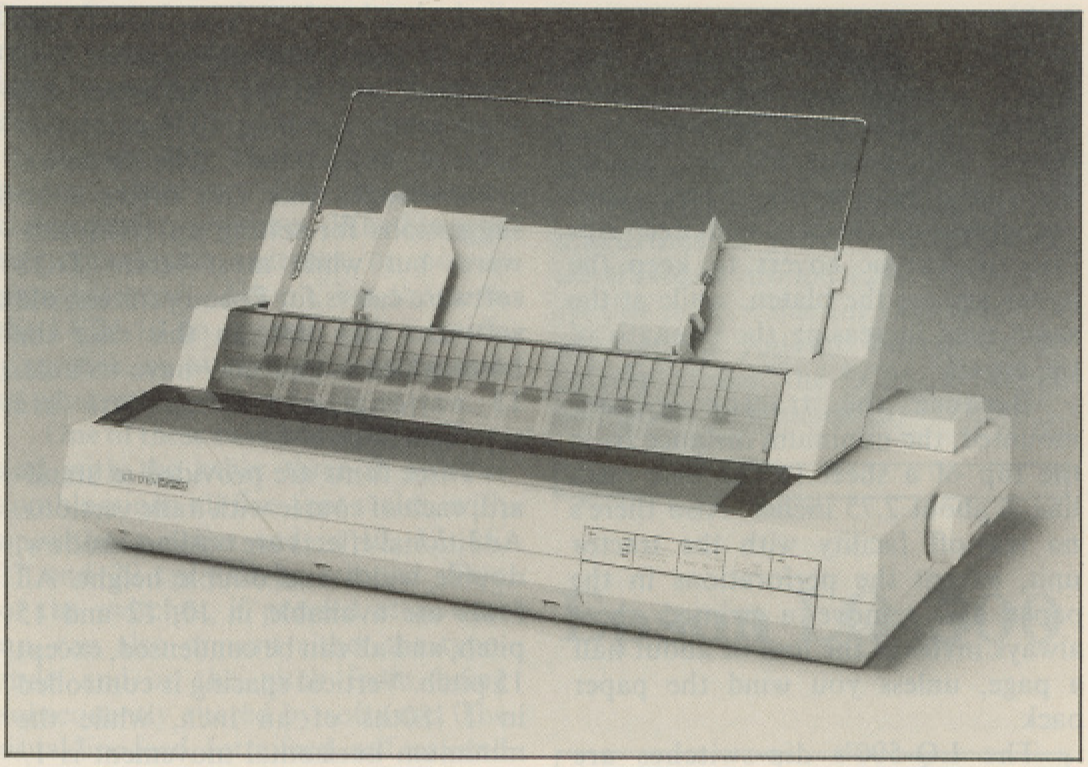
Setting it up

Both the paper feed knob and the cut sheet guide are already fitted. After the sound cover and the paper cutter have been removed (both smoked acrylic top-covers), transit packing was removed from the print-head and the full-width ribbon (all 18 inches of it) was fitted.

Surprisingly, Citizen haven't opted for a compact cartridge for a printer of this width. I found fitting slightly awkward, both because of its size and because full width ribbons tend to be more awkward anyway. The mains lead is separate and plugs in at the rear of the printer, as does the parallel interface cable. A serial interface is also provided as standard, and this is on the right side towards the rear. No other interfaces or buffers are listed.

The HQP's styling is very individual and quite elegant. I'm not sure why, but I couldn't help thinking that it would look good through a high street travel agent's window. At the same time, I also thought the sharp corners were not such a good idea. They might be painful if you knocked your hand on them, and they might get damaged if something solid were to bang into them.

Neither the printer's case nor the



covers inspired impressions of durability, made worse, no doubt, by their large size. I always felt a need to take care when lifting or replacing the covers. To be honest, I can't imagine them lasting very long in a school or similar environment.

As a result of this impression I checked, and wasn't very surprised to find the HQP at 16.5 pounds weighed only a pound more than the much smaller (80 column) LQ-500, and more than eight pounds less than the wide carriage SQ-2500. I know that you don't buy printers by the pound, but there must be a message here.

On the front, at the right are four push-switches to control manual operation, and immediately below them is a drop-down flap which conceals the dip-switches. In this position they are very easy to reach and nothing needs disturbing. Control of all the usual options is provided, but somehow Citizen have managed to spread them over four banks of eight – 32 dip-switches. It's certainly a record in my book.

Bank three is mainly concerned with the serial interface, but I still expected to see lots of extra options – there aren't any. There is more confusion though. First, which manual? Reference Manual? Wrong, the User's Guide. As to the switches, in the manual switch 1-2 is explained as 'Automatic Line Feed by CR code' with options 'Yes/No', switch 2-3 is shown as 'Automatic CR' with options 'Yes/no'. If that hasn't confused you switch 2-6 is labelled 'Automatic Line Feed by full column' with options 'CR+LF/CR only'!

There are other examples. Switch 1-1 is 'Epson emulation on/off' but a note for bank four says 'When SW4-8 off, Epson Configuration' and while switches 4-1 to 4-3 select international character sets, 4-8 really selects 'Scandinavian Character Set'!! Confused now? I was. There is a 'maintenance self-test' which prints out the settings, but it only shows a 1 or a 0 to show if a switch is on or off (!) unlike the LQ-500, which interprets the settings for you in English and shows the other option too.

I'm supposed to know something about printers, but it took me two attempts to turn the printer's line feed off. Keeping a sense of proportion, this is usually a one-off job, but while the manual is clearly laid out, in this area it just doesn't explain itself. As a first job and the introduction to the HQP-45, it wasn't very endearing.

It turns out that the Reference Manual (60+ pages) contains the software commands, while the Users Guide (80 pages) is everything else, including specifications, character sets, print examples and the quick reference card. Most things are quite well laid out and with good explanations (except for the lack of decimal control codes and the dip switch section), but splitting the material into two manuals is a mistake, and the names don't help.

It seems the information you want is always in the 'other' manual (and of course you can't find it). It's a nice idea but it doesn't work. The problem is aggravated by the fact that, in both manuals, although all the sub-topics are listed on the contents pages, only the first page number of each chapter

is shown. Even when you find the right chapter, you must still hunt through it. I thought perhaps I was being dense, but other reviewers have had the same problem.

One excellent feature is the HQP's unusually large print buffer of 24K, and this can be split into 16K for download definitions and still leave an 8K print buffer, first class. The manual doesn't gives download capacity in either mode.

One extra font can be added by means of a font card which slots in under a cover on the right to the rear of the machine. The manual doesn't show what other fonts are available. A second slot is provided for an emulation card, giving software compatibility with Diablo or Qume printers, or an IBM Proprinter. Other emulations are implied, but not specified.

A six page addendum sheet was included with the User's Guide. This contained many corrections and additions (some quite significant so really there were three places to look), and three more pages of index, doubling its size. I had already thought that the manual was a 'rush job', and this confirmed it. It isn't good enough when you're spending several hundred pounds.

Specification

The HQP-45 is Epson LQ-1000 command compatible, but as standard none of the IBM graphics, Greek or accented characters or maths symbols are included. Nine national character sets are provided.

Courier is the sole font. Font cards are necessary if additional styles are required, but only one can be used at a time. Italic is of course included, and LQ, draft and 'correspondence quality' (halfway between draft and LQ) are available. Enhanced print effects are inverse print, available in 10 or 12 pitch only, and double height. Neither of these use the standard Epson commands, but instead have unwieldy 'Citizen Escape sequence'.

The usual 10, 12 and 15 pitch are provided, and both 10 and 12 pitch can be condensed. Vertical spacing is controlled in 180ths of an inch, horizontal movement in 360ths.

Using the Citizen

Continuous paper is fed by a push tractor, but paper parking isn't provided, and isn't possible manually either, because the tractor drive can't be disengaged. A paper cutter allows short tear off. Use of continuous paper is very awkward unless the cut sheet paper guide is removed, because it hides the sprockets for loading and also gets in the way of the paper coming out again.

Swapping to cut-sheet paper isn't very convenient either. The sound cover must be removed and put aside, the paper guide then lifts up from the rear and locks in position. In theory that's it, and loading cut sheets is semi-automatic. Place a sheet in the guide and the printer feeds it through, triggered by a micro-switch. In practice the sheet is often 'grabbed' before you're ready and before it's quite straight, with the result that several attempts might be needed.

When the paper does go in straight, the vertical position isn't consistent to within half an inch, so manual adjustment is also needed (Even the User's Guide says adjust 'if necessary'). Unfortunately the remaining top cover, the paper cutter, must now also be removed so you can see the paper to make the adjustment. This permanently lets you in for the full blast of the HQP's noise, which is considerable.

On the front of the printer are four buttons. The right one is on/off line, and the other three provide manual control. Second from right is the form-feed/line-feed, the third selects between the fonts (if fitted as extras) while the left button cycles the options of draft, correspondence quality, letter quality and proportional.

To the left of this are LEDs confirming the current selection, but the screening between them isn't sufficient and light spills from one to the next. The separate paper-out light shows permanently, so until you get used to them these aren't very helpful. Line feed, form feed, self-test and hex. dump are also provided by the buttons.

Print quality was acceptable for letter quality or draft, but was not thought to be as good as the LQ-500's by anyone I showed sample to. I'm not sure what purpose 'correspondence quality' serves. It's little better than draft, certainly not good enough for correspondence, and seems rather superfluous. I think higher quality draft mode would be an accurate description.

Noise levels from the HQP-45 were totally unacceptable. It was unpleasantly loud with both covers in place, but when used for cut sheet (which demands your presence and the absence of both covers, see above) it was stunning. A conversation with someone in the same room was an effort, never mind by telephone. The HQP's speed was not much higher than the LQ-500's, and by no means enough to justify or excuse the volume of noise.

There were two worrying points. I noticed that characters printed in draft were, on alternate lines, quite noticeably displaced to the right or left, depending on which way the printhead was travelling at the time. This is another 'first' for me, and together with the noise levels suggest that both the printhead and its strobe timing are being pushed harder than they want to go. Time will tell.

The second and more serious worry was that, even with the printer power switch in the off position, when the mains lead was inserted there was a distinct electrical 'fizz', the source of which I don't know.

Conclusion

Citizen's HQP-45 is the wide carriage cousin of the HQP-40, their 80 column 24 pin printer. On the plus side the styling is quite striking, and the unusually large print buffer is very welcome.

Construction may prove adequate over time, but it doesn't inspire confidence, although there is a two year warranty. In places the manuals will leave new users floundering. The reliability of cut sheet paper handling is not acceptable – it's a good idea which in practice is a liability. The volume of noise is impressive, but for the wrong reasons. Provision of only a single font coupled with the lack of the expected 24 pin extras simply isn't good enough.

The recommended retail price is £699 and extra font cards are £35. (£803.85 and £40.25 including VAT).

I'm quite baffled by Citizen's pricing policy. I have found the HQP-45 advertised for £310 plus VAT. One could almost believe the recommended price (obtained from Citizen 15/12/88) is intended to make the printer appear to belong to a higher specification category than it deserves. I can't for a moment recommend it.

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The *Your Commodore* Software Service makes available all of the programs from each issue on both cassette and disk at a price of £6.00 for disk and £4.00 for cassette. None of the documentation for the programs is supplied with the software since it is all available in the relevant magazine. Should you not have the magazine then back issues are available from the following address:

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B R E A K

Readers Problems

Though the Commodore 64 is one of the world's most popular microcomputers, it can be very difficult to find specific information about your particular machine.

At the *Your Commodore* office we receive literally hundreds of letters from you, our readers, on a wide range of subjects ranging from the simple 'Can you give me the telephone number for...', to the more complex 'I'm trying to write a program that uses a split screen. How do I do it?'

Unfortunately, the volume of mail received has become so great that it is impossible to answer every letter and still manage to publish a magazine each month.

For this reason we have felt it necessary to produce a number of guidelines for getting information from us:

1) We cannot guarantee to answer every letter sent to the magazine. Should it become apparent that a number of readers are suffering from the same problem, then we will reply to the letter via the Letters page.

2) A new helpline has been set up. This will be open for your queries on Tuesday and Thursday afternoons between 2.00pm and 4.00pm. We will not be able to deal with our telephone queries at any other time. If our technical adviser is not available when you ring, then a message will be taken.

3) If you are having problems with one of our listings, can you please let us know in writing. This will enable us to see if a number of people are having the same problem. When a common problem becomes apparent with a program, then a correction sheet will be issued. Enclose a self-addressed, stamped envelope and we will send you a copy of the correction sheet as soon as it is available.

We are sorry that it has become necessary to instigate these rules. However, we are sure that you will agree with us that the more time that we can spend making *Your Commodore* the most informative magazine around, the better.

For program queries write to:
Program Corrections
Your Commodore
Argus House,
Boundary Way,
Hemel Hempstead
HP2 7ST
Tel: 0442-66551

CORRECTIONS FOR MARCH '89

ELECTRONIC NOTEBOOK

Unfortunately 5 lines were cut from this program at the time of press. The missing lines are produced here.

```
7D510 E=E + 1:E1=E
B8520 GOSUB540
9A530 RETURN
71 540 IFE  E1THENE1=E
60 550  X$=STR$(E) + "[P1]" +
   STR$(E1) + "[P1]" + STR$ (S1) +
   "[P1]" + STR$ (S2) + "[P1]"
```

HEAD FOR HOME

A number of readers have queried a couple of strange statements that appear in this program. The line in question is 30. The items giving concern are (014) and (008).

These are the codes for the control codes 14 and 8 respectivly. Numbers are used to represent them as they would appear as graphic symbols.

008 is the sames as pressing CTRL and H at the same time
014 is the same as pressing CTRL and N at the same time

The first code disables the shift and commodore keys, whilst the second selects lower case mode.

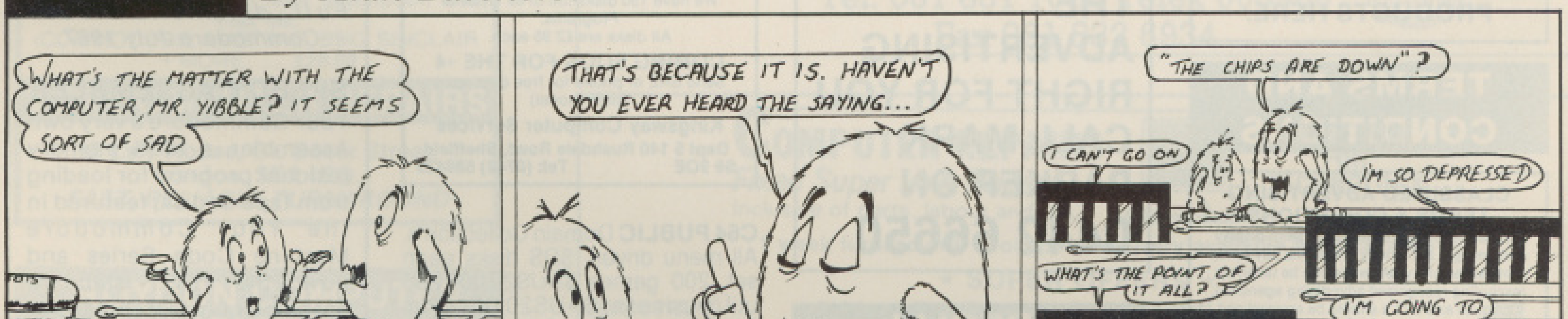
Commodore Where Are You?

At the *Your Commodore* office we are repeatedly asked for the address and telephone number of Commodore U.K. Many people, after referring to their computer manuals, believe them to be based in Corby.

The Commodore plant at Corby was closed down some time ago. Reproduced here you will find the correct address for Commodore U.K.

Commodore Business Machine, (UK),
Commodore House. The Switchback,
Berks SL6 7XA.
Tel: (0628) 770088
Gardner Road, Maidenhead,

The Nibbles *By Alan Batchelor*



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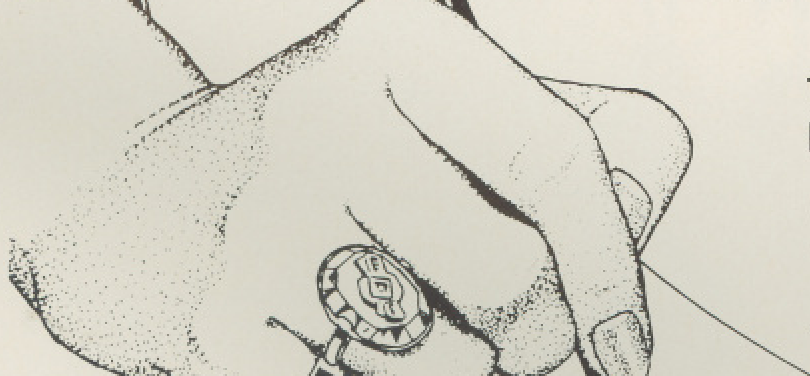
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